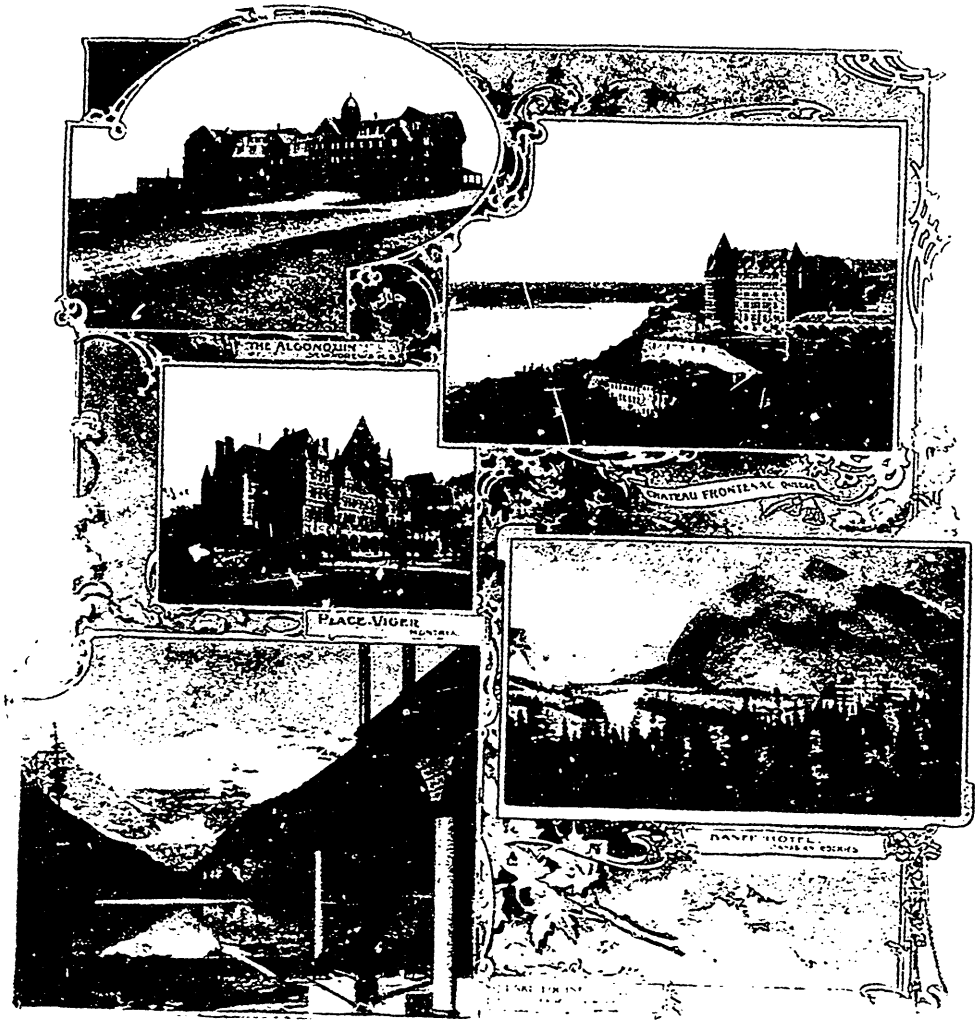
Single Copies, 10c. OCTOBER, 1903 $1.00 a year

ROD AND GUN IN CANADA

Gordon Glacier

A MAGAZINE OF CANADIAN SPORT AND EXPLORATION

Canadian Pacific Railway

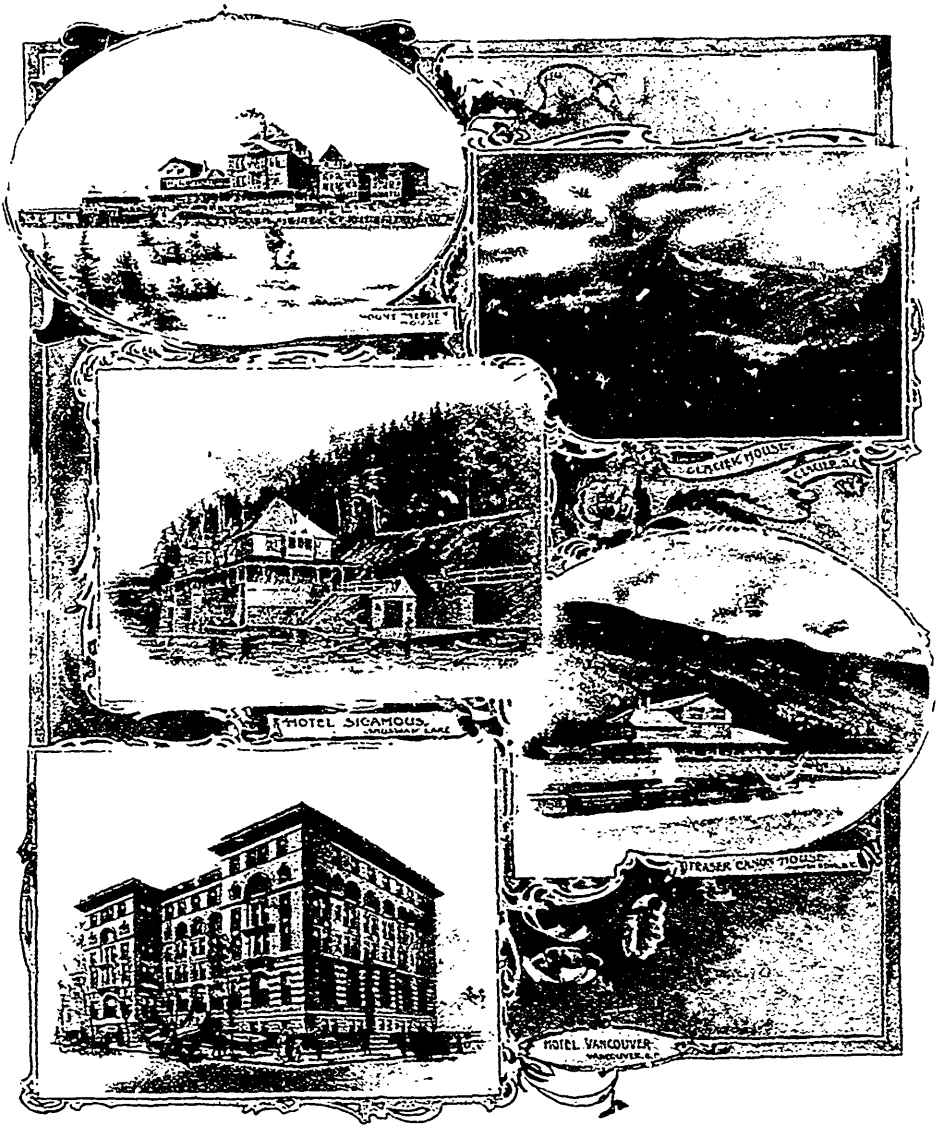


Algonquin,	St. Andrews, N.B.,	from $3.00 upward
Château Frontenac,	Quebec, P.Q.,	" 3.50 "
Place Viger,	Montreal, P.Q.,	" 3.00 "
Banff Springs,	Banff, N.W.T.,	" 3.50 "
Lake Louise Châlet,	Laggan, N.W.T.,	" 3.00 "

For further particulars as to any of these hotels, apply to the respective Managers, to any of the Company's Agents, or to

ROBERT KERR, Passenger Traffic Manager, MONTREAL.

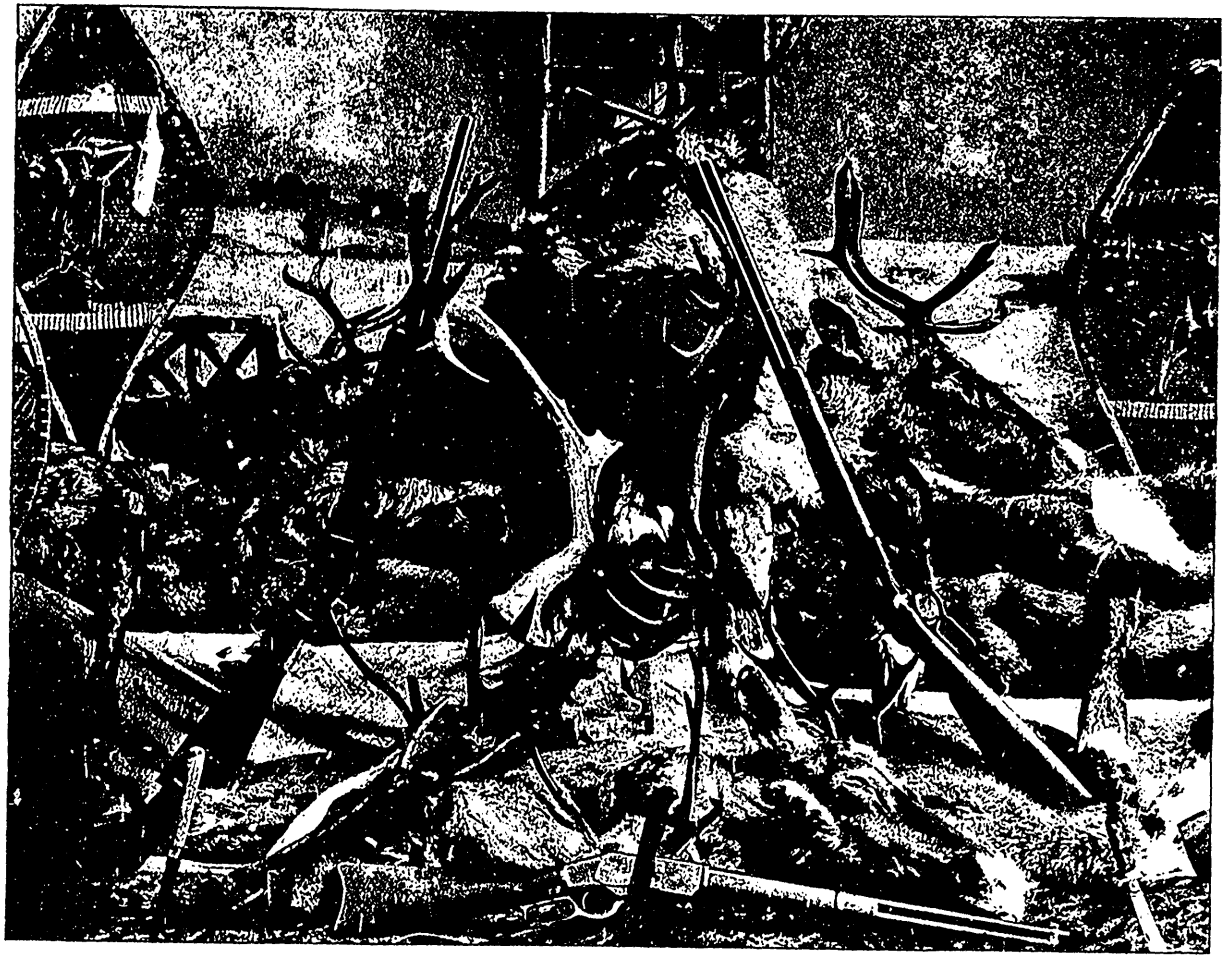
Canadian Pacific Railway



Mount Stephen House, - -	Field, B.C., - -	from $3.00	upward
Glacier House, - - - -	Glacier, B.C., - -	" 3.00	"
Hotel Sicamous, - - -	Sicamous, B.C., - -	" 3.00	"
Fraser Canon House, - - -	North Bend, B.C., - -	" 3.00	"
Hotel Vancouver, - - -	Vancouver, B.C., -	" 3.00	"

For further particulars as to any of these hotels, apply to the respective Managers, to any of the Company's Agents, or to

ROBERT KERR, Passenger Traffic Manager, MONTREAL.



TROPHIES OF THE HUNT.

This collection of horns, snowshoes, toboggan and rifles belonged to a party that had just returned from a caribou hunt in Northern Quebec.

ROD AND GUN IN CANADA

VOL. V. MONTREAL AND TORONTO, OCTOBER, 1903 No. 5

A Mighty Waterway.

BY ARTHUR O. WHEELER, F.R.G.S.

At Medicine Hat, a small thriving town on the Canadian Pacific Railway, the great trans-continental highway crosses the south branch of the Saskatchewan River. The traveller notes with interest the deep, sharp-cut trough in which it flows, worn through the course of ages in the rolling prairies, midst which it winds its way. Further to the north and east, the terraced valley, growing ever deeper and wider and the wooded bottom lands more frequent, it joins, after a course of nearly one thousand miles, the north branch of the same stream. United, these waterways present a mighty river from half to a mile wide, flowing several hundred feet below the prairie level, terrace rising upon terrace to form a valley two to three miles from side to side and bear witness to the irresistible flood that in by-gone ages gradually gouged out the existing bed. In the depths below are many channels, separated by tree-clad islands and sun-lit gravel and sand bars. Maples, cottonwoods, aspens, high-bush cranberries and red willow (the Ki-ni-ki-nick of the Indian) clothe the islands and the valley bottoms with a tangle of forest growth, and in the late fall render it a highly coloured picture of yellow and green.

Along the margin of the stream, in the soft mud or sand, may be seen an encyclopedia of the natural history of the country, and one versed in hunting lore can readily read the many footprints as in a book :—bear, deer, wolf, coyote, fox, beaver, muskrat, otter, mink, marten and many others are there seen, and form a study of deepest interest. And so, this mighty river, augmented by many a tributary, rolls onward to pour its waters into the great inland sheet of Lake Winnipeg.

Some seventy miles above the town of Medicine Hat, the South Saskatchewan is formed by the united waters of the Bow, Belly, Highwood, Oldman's, Waterton and St. Mary Rivers, and at a somewhat greater distance below is joined by the Red Deer River. All receive their supply more or less directly from the eastern watershed of the Continental Divide and the vast areas of snow and ice stored at the summit of the main range of the Rockies of Canada.

Gazing at the sullen, mud-coloured torrent, the traveller cannot but wonder where such a body of water first comes from, and through what process of evolution it arrives at the stage which here meets the eye. The journey westward by the Canadian Pacific Railway largely helps out a solution of the problem. At Calgary, a busy distributing centre for the ranching, farming, timber and mining lands of Western Alberta, situated on the railway, 180 miles west of Medicine Hat, the Bow River, one of the two principal streams forming the South Saskatchewan—the Belly River being the other—is now encountered and followed by the railway into the moun-

tains by way of the Bow Pass. As most accessible, it furnishes a fair sample of the process of evolution above referred to. The river has here a width of some three hundred feet and a greatest depth of from eight to ten. In mid-summer the water is clear as crystal, and the boulders and gravel at the bottom easily discernible. In June and July it is a rushing, mud-coloured flood, and occasionally, owing to cloud bursts along the eastern face of the mountains—some fifty miles distant—or to exceptionally hot weather early in the year, overflows the banks and causes much confusion among the inhabitants of the lower levels of the town as well as considerable disarrangement to railway traffic, owing to washouts of the white clay banks which confine this portion of its course.

On the climb through the foothills, from the windows of the train the trough of the Bow may be seen, winding like a black snake through the green or yellow grass of the beach-lands above, so narrow as only to be followed by the eye from a height or when close to the bed, and chiefly to be traced by a line of stunted spruce tops and gnarled and twisted Douglas fir, distorted by the strong, warm chinook winds sweeping down the valley. In this section the Bow is joined by several tributaries of considerable volume, noticeably the Elbow, Jumpingpound, Ghost and Kananaskis Rivers. Some idea of the volume attained by these streams during flood time may be gathered from the following measured discharges :—The average highwater flow of Jumpingpound River is 130 cubic feet per second ; in 1897, owing to continued heavy rains in the mountains, the flow reached the enormous proportion of 7,400 cubic feet per second. This, of course, was abnormal, but still a flood flow may be anywhere between. Owing, however, to their deeply cut channels, the streams are well confined and little damage is done beyond partially flooding the immediate bottoms.

Not far beyond the junction of the Kananaskis the gap in the eastern escarpment of the mountains is reached. The Bow River now assumes the nature of a mountain stream ; the grade becomes steeper, the course wider, and boulders and stranded debris more frequent. At Anthracite, the railway leaves it temporarily to take a short cut, and does not again join it until some distance beyond Banff. In the interim, however, other attractions are presented, and the river for the time being is forgotten. At the first-named village are the coal mines ; close by are the "Hoodoos," fantastically shaped pillars of hard, sandy-clay, eroded from the face of the cut-banks on which they stand. And then, the Canadian Buffalo Park, and the hope of a passing glimpse at the buffalo and other species of mountain animals collected there by the enterprise of Mr. Howard Douglas, the present superintendent. In 1901, the writer was standing in the observation car of a westbound train. On board was a largely attended Raymond excursion from the United States. As the confines of the park were reached, the conductor came in and called in a loud voice : "Now, ladies and gentlemen, look out for the buffalo !" Almost as he spoke, two of the animals broke from a poplar grove immediately beside the railway and lumbered along in clear view for fully a minute. It seemed as though he had touched a button and let them loose. It is needless to say, the incident was greeted by cheers and many exclamations of delight at the forethought of the Company in providing so interesting and timely a spectacle.

Beyond Banff, the river flows quietly through the valley of the Vermilion lakes, but soon again becomes more broken as Laggan and the summit are approached. It grows ever smaller as numerous tributaries are cut out, the Spring River, Cascade Creek, Forty-mile Creek and Pipestone River, until at Laggan it has but a width of a hundred and fifty feet, and a depth of only five or six.

Here, it is crossed by a rustic bridge, from which a well made road leads through picturesque pine and spruce woods, along the border of a foaming cascade to the C. P. R. chalet, at Lake Louise. Lake Louise is a gem of transparent blue, nestling at the base of Mts. Victoria, Lefroy and Fairview. It collects the melting ice and snows, reaching from base to summit of the mountains named in a natural reservoir, which pours

its outflow by the torrent along which the road winds, in a well regulated supply to maintain the waters of the Bow.

As the East and West "Flyers" unload their visitors to the chalet, it is amusing, on a wet day, to see them rapidly clad in "slickers" (long, yellow oil-coats, worn by cowboys and riders on the Western prairies), and driven off into the woods, for the chalet is two and a-half miles distant from the station. The process of being so clad is, especially among the ladies, a source of much merriment, and interesting as typical of the country. Were cowboy hats also provided the necessity for umbrellas in an open vehicle might be dispensed with.

A mile and a-half beyond the station the Bow Valley turns northward, while the railway continues west through the Kicking Horse (Hector) Pass. The real business of following the stream to its source now begins. Tents, food supplies, and general camp equipment must be carried on pack-ponies. To convey the writer's party eight pack-ponies were used. The neatly arranged bundles, covered by white duck mantos, and firmly secured by that crowning stroke of genius, the diamond hitch,—so complicated to the uninitiated, and yet, in skilful hands, so ready to dissolve into a state of untiedness—looked most picturesque and business-like, and imbued us with the impression that we were embryo explorers.

Nine miles to the first camp ground, a dryish spot by the river in the middle of surrounding muskegs; a trail, which cannot be commended except in the most summer-like weather leads up along the east side of the river. It was originally cut out when a selection of routes through the main range was being made for the railway. At the time it was thought that the valley and pass at the head of the Bow might be utilized to connect with the Howse Pass, leading by the Blaeberry River to the valley of the Columbia. The scenery is not as yet of the most picturesque order. The country has been much burned over, and is a tangle of fallen tree trunks and second growth pine, uncomfortable to travel in, even on the trail. In spring and early summer the sides of the path are brightened by many mountain flowers. Among them were noticed the yellow columbine, which only grows at a considerable altitude, the painted cup, varying from yellow and pink, through all shades of red to the deepest crimson; purple asters, mountain marigolds and yellow daisies. The first six miles from Laggan is comparatively dry, but from thence to the summit at the source of the Bow the country on both sides of the stream is a series of muskegs, alternating with timber land and draining by an endless succession of water courses to the river. The latter, now only a hundred feet wide, is a swiftly flowing torrent, broken by swirling rapids, and split in places into minor channels by gravel bars, grown with willows. The muskegs are a veritable breeding ground for insect pests, and in a wet season, such as the present, make life hideous. Chief among them are the bulldogs or horsefly, which practically devour the ponies and are not above cannibalism; then there are the ordinary mosquito and a species of red black-fly, if such a term may be used. They are somewhat larger, but very similar in their methods of attack and unceasing worrisome buzzing into the eyes and ears of the traveller. Lastly, there is the almost invisible sandfly, so significant of the phrase "*multum in parvo.*"

On the west, across the river, rise the dark walls of the Wapputehk escarpment, showing on its sheer precipitous face the formation of three distinct geological periods. Behind the escarpment lies the picturesque, glacier-hung valley of Bath Creek, draining the Bath Glacier and an arm of the Wapputehk snowfield. Bath Creek is the most westerly tributary of magnitude to the Bow River. On its further side rise Mounts Bosworth, Niles and Daly, forming a portion of the backbone of the great Continental Divide. Down their eastern precipices silver cascades leap to swell the torrent below.

Eastward of the Bow River, the timbered slopes rise upward, first to open timber, once the old bush is passed, and then to grassy alps, interspersed by clumps of larch (tamarac) and dotted here and there by tiny ponds and shining streams draining from the snows above, where pink and white heather forms a pattern on the carpet of green, and the

resounding note of the whistler echoes from crag to crag high up on the overhanging cliffs.

The crest of the ascent is a long, frequently cleft ridge, commencing from nearly opposite Laggan and culminating in the castellated and battlemented fortress of Mount Hector, rising to an altitude of 11,200 feet above the sea. The peak, which is pre-eminent, is well named in honor of Dr. James Hector, now Sir James Hector, the renowned explorer and topographer attached to Capt. Palliser's expedition of 1857-60. The ascent to it is easy, and only difficult on account of its length and the rough slopes of shale and scree. Arrived at the crest of the northern shoulder, a snowfield leads directly to the summit, the only danger being encountered near the top, where the snow-slopes are very steep and lie in a thin layer on the slippery rock beneath. The first ascent was made in 1895 by Messrs. Abbot, Fay and Thompson, of the Appalachian Club of Boston. Their names were now found in a bottle in the cairn they had erected. Space does not permit of a description of the glorious view on all sides from this superbly isolated and exalted peak; suffice it to say that it well repays the exertion of the climb, and far more than compensates the trials and tribulations of the Bow Valley. Moreover, its easy accessibility renders it a specially desirable point of attack. What caused the writer most surprise was that on setting up a transit-theodolite and looking southward at the best known section of the mountains, only four peaks could be seen to rise above the horizontal plane of the summit of Hector, viz.:— Mounts Temple, Hungabee Goodsir and Owen. Below, to the south and west, lay the valley of the Bow, spread out like a map, every wind and turn of the river clearly visible; while, beautiful beyond all, immediately to the west, lay Hector Lake (formerly known as Lower Bow Lake). The waters, an exquisite green in colour, reflected the surrounding mountain peaks and passing fleecy clouds, and showed like a rich gem in the darker setting of spruce and pine forest surrounding its shores to the very edge. Every bay and shallow was sharply defined, and the very peculiar topographical features of this glacial lake, one of the many feeders of the great Saskatchewan River, became clearly apparent. Two were particularly striking: (1) The inlet and outlet were both at the same end, and only a short half mile apart, the former divided into many channels and slowly pushing out a delta into the lake. Here was a large natural reservoir, of greatest length near four miles and greatest width probably one and a-half, ensuring at all times a steady flow to the Bow River, so necessary an adjunct to the fertile plains of Alberta. (2) The further end seemed to be cut square off, and from our great height what looked like a sand beach glittered in the sunlight. Many streams were flowing through it, discharging their turbid waters into the lake like so many puffs of smoke.

Beyond, at the further end of the beach, a huge tongue of crystal ice dropped from the heights above, broken into numberless wonderful *séracs* where the glacier fell over the cliffs that lay beneath. Above the icefall, rising heavenward in slopes of whitish snow, towered Mount Balfour, on this side, a beautiful snow peak of the first order. Two black rock spots near the summit looked like eyes, and rendered the peak most distinctive and recognizable from all points in our direction. To the north, blocking the straight line of the valley, rose the Goat Mountain of Dr. Hector, now more appropriately named Bow Peak. To the south-west, at the north end of the Wapputehk escarpment, isolated on either hand by an amphitheatre, Pulpit Peak stood out strikingly. From certain points of view, it is distinctly worthy of the name, and conveys the impression of a mighty pulpit, finely carved on the grandest lines of medieval architecture. One thing is certain: that together with its surroundings, it preaches a sermon, which for solemnity, grandeur and wisdom cannot be approached by mortal man.

In the amphitheatre on the western side of the peak rest two beautiful little lakes of distinctly opposite types: one is fringed with a dense forest growth of dark green spruce; the other, some thousand feet above it, is surrounded by sheer cliffs, rock slides and overhanging

walls of ice and snow cornices. The waters of the upper—misnamed "Turquoise" Lake—are of a beautiful cerulean blue, while those of the lower are a deep ultra-marine, deepening as the day advances to indigo, and as the shades of night fall to inky black. It is known as "Lake Margaret." Each contains from 25 to 30 acres, superficial area. The waters of the Turquoise Lake drop to those of Lake Margaret in a slightly broken fall of fully one thousand feet; while from thence they flow in a foaming cascade to empty into Hector Lake. A visit to Lake Margaret disclosed the fact that it was alive with trout. At the mouth of the outlet, where were collected a number of drift logs, shoals could be seen, varying from ten to twenty inches in length. Human nature is human nature, and some of our party had lines in their pockets and flies in their hats. Consequently, there was a fine dish of trout for supper that night. Moreover, the fact was established that as these must have come from Hector Lake, that lake must be plentifully stocked with fish.

It is probable our party were the first to navigate Hector Lake. For that purpose, an Acme folding canvas boat was used. It was twelve feet long, and easily carried three. Packed in a roll it readily fits on the back of a pack-pony, and is strongly recommended to all exploring parties as doing away with much extra travel and for taking supplies across swift deep streams. If stiffened by lashing a couple of thwarts fore and aft at the joints of the upper frame, they are very safe and satisfactory.

Arrived at the supposed sand-beach, it was found to consist of packed boulders and gravel, evidently the result of glacial action and subsequent packing and levelling by water flowing from the glacier further on. The gravel bed stretched in a straight line across the end of the lake, and beyond a few feet at the edge the water seemed of great depth. The glacier lay half a mile inland. At the centre of the base of the ice fall, a fine cave, some twelve by twenty feet was excavated, from which the main outflow poured in a wild torrent. To the right, a fall of several hundred feet carried the drainage from higher levels. In front of the tongue or snout of the glacier, at more or less regular distances, lines of boulders, mud and gravel, stretched like earth works, cut here and there by dried up and still flowing water channels. These lines showed clearly, year by year, the retreat of the Balfour Glacier. Huge isolated blocks of rock, weighing hundreds of tons, lay scattered around where they had been dropped from the surface of the ice. Black dripping crags on either hand, rising several thousand feet, completed the striking desolation of this morainal basin. Looking towards Mount Balfour, now wrapped in clouds, a huge black bee-hive rock rose from the centre of the ice-fall and dominated the scene. Here, indeed, was one of the homes of the Bow River, and incidentally of the Saskatchewan.

Bow Peak stands directly in the centre of the valley, and forces the river to swing to the eastward around it. From the summit, a scene, unique in the Canadian Rockies and probably in any other mountain system, meets the eye. To the south, below it, lies Hector Lake, of a beautiful turquoise green; on the opposite side, directly northward, stretches Bow Lake (formerly known as Upper Bow Lake), the waters of a more decided green in colour, but of the same translucent rather than transparent appearance as Hector Lake. The southern end is broken by islands, separated by narrows, where the water flows in rippling rapids. The shores are partially clad in the same dark green setting as the southern lake, but at the north end, like a wide spreading avenue, a three mile stretch of bright green verdure, fringed on either side by open spruce timber, reaches directly from the water's edge to the summit of the pass. The west end of the lake is shut out from Bow Peak, but by following it up, a morainal bed, similar to that of Hector Lake is discovered with the same turbid streams discharging their smoke-puffs (for that is what they look like from a great height) into the lake.

The Gordon Glacier, fed by the snowfield lying east of Mount Gordon, one of the peaks of the main water shed, discharges its outflow by three separate ice-falls. The largest and most interesting

is that nearest Bow Lake, and all the streams from the others join at its foot. Between it and the lake are three distinct terminal moraines, the two outer clad by a thick growth of timber, showing that ages have gone by since the ice rested at their foot. The third or inner one is only just beginning to show signs of vegetation, and is chiefly composed of bare boulders and clay. The ice is now several hundred feet distant from this one. Through the bed rock of the second moraine, the never ceasing torrent has cut a gorge with sides a hundred feet or more in height, and so narrow that at one point the chasm is bridged by a single huge boulder; at another, the jutting rocks are so close together that one stride passes you from side to side; beneath the torrent boils and roars. Twenty feet down is a narrow ledge; standing on it the canyon is completely shut in with the exception of a small hole through which may be seen waving green trees on a background of bright blue sky. At your left the stream thunders in a mighty fall to depths below, filling the hollow with fine spray on which the sun, shining through a slit in the gorge behind, displays a rainbow of most vivid prismatic colouring. This glacial stream is in reality the farthest source of the Bow, for though another stream comes down from the summit of the pass, it is small in volume when compared with that from the Gordon Glacier.

The ascent of Mount Gordon was made by the middle ice fall. On cresting the ridge, imagine our surprise to see before us, sitting on a ledge at the side of a fine rock peak, no less a personage than Santa Claus. The resemblance was perfect, and he evidently seemed at home. As children, much wonder has been expressed as to where he lived when not busy distributing gifts, and many northern countries have been named as the land of his adoption. It is pleasing to know that his home is really at the summit of the Continental Divide, in the heart of the Canadian Rockies. We named the rock "St. Nicholas Peak" in his honour. At the southern end of the snow-field leading to Mount Gordon is another very striking rock, which stands up prominently on the sky line. At a distance and until quite close, it is an almost exact representation of a vulture sitting on top of a rocky knob, which here juts out of the snow. The pass beside it has been named, most appropriately, "Vulture Col" by previous explorers.

Sitting on the summit of Mount Gordon, the very backbone of the continent; before you the two most reliable maps of the mountain region, viz.:—that issued by the Department of the Interior and the more far reaching one compiled from his explorations by Dr. Norman Collie, F.R.S., it soon becomes apparent that there are hundreds of fine peaks still unnamed, many interesting valleys yet to be explored, and many snow-fields and glaciers still to be discovered.

At the summit of the Bow Pass are a number of tiny ponds fed by springs and surrounded by groves of spruce trees. From these the waters flow north and south. The stream to the north is tributary to a beautiful turquoise blue (if it be permitted to use such a distinction) lake, completely surrounded by dense forest growth. It is named "Peyto Lake." At its head the Baker Glacier falls from Mount Baker—also one of the peaks of the Divide—to another morainal bed, through which many sparkling streams discharge the outflow of the Glacier to feed the North Saskatchewan River. The stream flowing from Peyto Lake is named Mistaya Creek, and by some is known as the south branch of the North Saskatchewan. It flows northward, a beautiful blue between gentle slopes of dark green spruce and pine, frequently joining other lakes fed from glacial sources, and on again through vistas of towering peaks and snow-clad summits, black precipices and walls of ice, ever increasing in volume and power until, after a course of thirty-five miles, it joins the middle and north branches of the North Saskatchewan, when the united course becomes east and the river starts on its lengthy run before joining the South Saskatchewan at Fort à la Corne, some fifty miles below the town of Prince Albert.

On the other hand, the Bow River starts from the same source and flows south almost the same distance; then, turning eastward, it is joined by other

streams to help form the South Saskatchewan. Thus, the waters flowing in opposite directions from practically the same source meet again far away beyond the prairies, after a run of nearly fifteen hundred miles.

In the foregoing sketch, the Bow River has been followed to its source, and it has been seen that its steady, unceasing flow, is mainly dependent upon the vast bodies of snow stored along the crest of the Continental Divide and the numerous reservoirs or lakes supplied by nature to catch the run off from them and distribute it evenly to the main waterways. From the summit of the Bow Pass to the International Boundary or 49th parallel of latitude, every drop of water flowing from the annual melting of the entire body of snow lying on the eastern side of the watershed between the points named, as well as that from the annual rainfall at lower altitudes, goes to swell the South Saskatchewan. In the case of the North Saskatchewan, while the actual area drained is much smaller, extending only over less than a degree of latitude as compared with nearly three degrees in the former instance, yet the balance is more than turned by the fact that the area of ice and snow is very much greater and the run-off correspondingly large.

Considering that the same process of river-making is in operation throughout the entire area indicated, the wonder is: not where all the water comes from to make so large a stream as the Saskatchewan, but how so small a stream can carry it all away.

Rocky Mountain Sport.

BY C. G. C.

In June Mr. de L. and I left Edmonton, Alberta, with an outfit consisting of six half-breeds, thirteen pack horses, and our six saddle animals. The pack horses each carried about 200 lbs. Our trail from Edmonton to the mountains we found in better condition than usual, the muskegs, which at times are very bad, were dry, the fallen timber that lay so thick on our trail the year previous had been partly burned away, consequently did not impede our progress.

Arriving at the mountains, after eleven days' travel, we pitch our camp to rest our horses, buil' a "cache" for our provisions, and await our guide's arrival, who was to follow us in a few days. From this camp we sent back two of our men, allowing them provisions enough for their return journey to civilization. This left us with the humble staff of three men—one to look after our horses, one to cook, and the guide. While encamped here Mr. de L. and I made several short trips into the mountains after sheep and goat, but without much success. Later on, however, we had a good deal of sport, as will be seen, amongst these animals.

Five weeks' provisions had already been made into packs, and everything necessary to take with us for this length of time put aside by itself. The balance of our goods had been stowed away in a good strong "cache" built for the occasion.

August 1st.—We leave our camp on the Athabaska River with our saddle animals, and six pack horses carrying about 150 lbs. each, and cross a steep mountain some 1,000 feet high. Descending on the other side we meet with several small swollen rivers, crossed by bridges. At one of these bridges our pack animals took fright, crowding each other as they filed across, and one unfortunate pony, pack and all, was sent rolling over into the rushing water. We got to work with ropes, and succeeded in landing horse and pack, but not before everything got thoroughly saturated.

Two days' travel brought us to a place on the Athabasca suitable for swimming the horses across, a feat which we accomplished successfully.

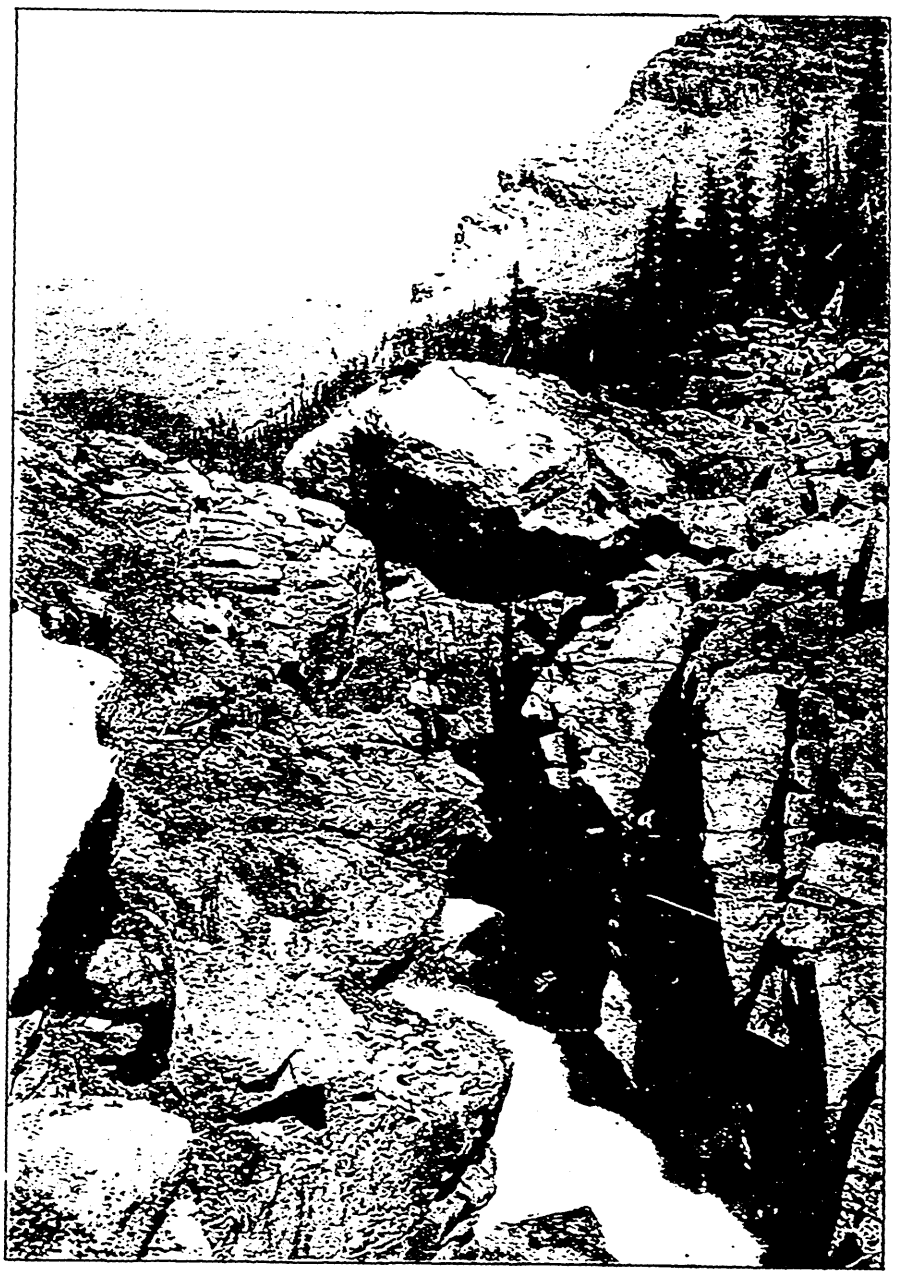
August 5th.—We find ourselves on the summit of the Rockies, and in a country where one can always expect to find caribou. Our camp was pitched considerably above timber limit; conifer roots had to be burned as firewood. Whilst here we were greatly annoyed by the appearance of two Indian "lodges," one of which contained a well-known hunter of meat, a killer of cows and calves. It is evident these people expected us to fee them on condition of leaving us to hunt freely in these preserves. Speaking to John about the matter, he assured us caribou were plentiful, and there would be enough for us all. At "Miserable Camp" (as Mr. de L. appropriately named this place) we killed two goats, one falling to Mr. de L.'s rifle and one to my own. Travelling on further in a north-westerly direction we arrive at a very pretty lake, on one side of which the country is open, and covered with grass unusually green for these parts; clumps of diverged conifers grow abundantly round the water's edge. A delightful spot is chosen for our encampment, and with hopes high and ardent we commence caribou hunting in real earnest. As my diary gives full details of a few good days' sport, I think I had better copy some passages from it.

August 12th.—No fresh meat in camp. Mr. de L. takes John and goes after caribou. I in the meantime see after the horses; those with sore backs and bruises are washed, and Elliman's Embrocation applied. In the evening Mr. de L. and John return, the former bringing a very fine specimen of a caribou mask, whilst the latter carries some fresh meat. Mr. de L. gives me over the camp fire a graphic account of his day's work, somewhat as follows: After they had gone above the timber limit, and had sat down to rest themselves, John took the glasses and swept the circuit, and almost as soon as he had done so he exclaimed, "Me see him caribou," pointing at the same time to where it was. It was lying on a patch of snow, but soon got up and commenced to graze, lying down again on the snow almost immediately. They started down the mountain, crossed the valley, and soon arrived within shooting distance of this magnificent beast. Mr. de L. aimed at the chest in line with the shoulder, the animal facing him, and pulled the trigger. Noticing no visible effect, he fired his second barrel as the caribou trotted off, and saw him distinctly kick out his hind leg. John called out, "Good, sir!" Following in haste for some one hundred yards through the timber they found the caribou quite dead. Part of the bullet of the first shot had grazed the heart and raked the flesh from where it entered high up and well forward on the shoulder to near the left hip; the second shot had struck the buttock.

August 13th.—Antlers and meat were brought to camp by two of our men and four horses.

August 16th.—Indians, encamped close to us, are shooting from three to six caribou a day. Mr. de L. and I decide to push on ahead of them. Taking our saddle horses and John, we go some distance beyond where any hunting has been done this year. Leave our horses hobbled where grass is plentiful, and climb to a height sufficient to command a good view of the mountains round us. As soon as John looks he sees, as if by instinct, two fine bull caribou with fair sized antlers. Watching them until they disappeared behind a knoll we quickly descended and commenced our stalk, John leading the way whilst we followed. Fortunately for us the caribou remained behind the hill until we arrived within shooting range; they then either heard or winded us, as they cautiously moved out from their hiding and began trotting quicker than we liked, Mr. de L. and I firing alternately at them until they fell within a few yards of each other. Both heads were fine trophies; we left John attending to them whilst we walked back to where we left the horses. Our guide, coming to join us, came across another very fine caribou close to the timber and shot it, as there was no time to bring us on the scene. On our way back to camp we had to follow the bed of a creek for some distance, and saw several fresh grizzly bear tracks in the sand.

August 17th.—Indians kill seven caribou to-day, most of them cows and calves unfortunately; this makes a total

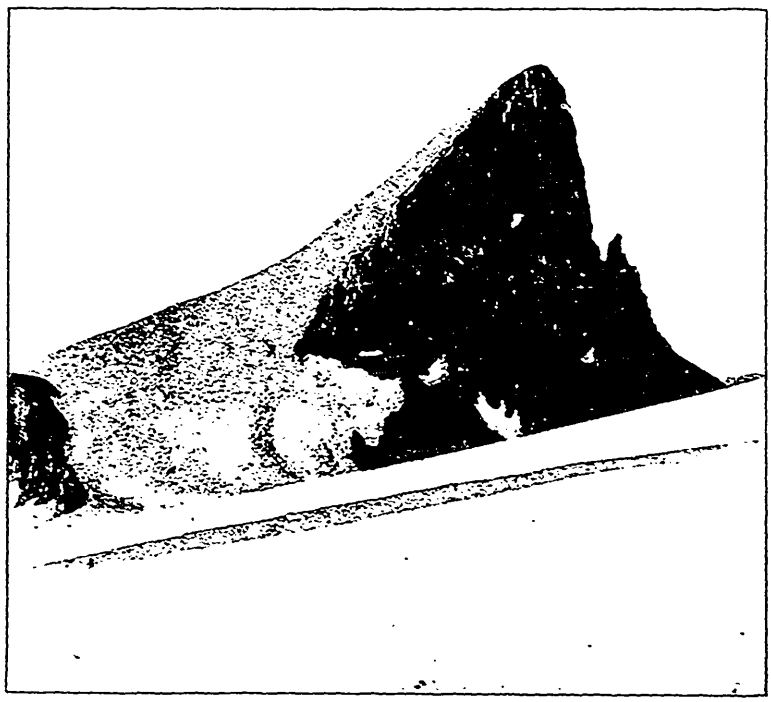


A NATURAL BRIDGE.

The Canyon below the Gordon Glacier. Taken by A. O. Wheeler, D.T.S.

BOW LAKE, ALBERTA.

Taken by A. O. Wheeler, D.T.S., from the summit of Bow Peak.



ST. NICHOLAS PEAK.

This startlingly *bizarre* crag would, were it in Europe, certainly be considered the home of the supernatural.

of twenty caribou killed by five of us since this day week, showing what sport the country can afford to those who care to follow it.

August 19th.—To-day we again start about 9 a.m. to look for caribou. One canon not far from camp, which remains as yet undisturbed, we make up our minds to visit. Looking over it with the glasses, it seems empty of game. Sitting down to smoke for half an hour or so, we start back towards camp, and go about a quarter of a mile, when John sees a caribou crouching behind some dwarfed pines. We watch its movements with some interest. As it arrives at our tracks of the morning it appears very much alarmed, and at a loss to know which way to go. Finally it comes trotting towards us, but at about two hundred yards' distance wheels, as if intending to go back. Mr. de L., however, stopped it with a well directed shot, which broke the jugular vein and turned it completely over.

Caribou are long, low, heavily built animals, some of them weighing at least 500 lb. The antlers of the male are much larger than those of the female. The nose of the animal seems more useful to it than even the eyes. They commence rubbing the velvet about the end of August; at this time they confine themselves entirely to the timber. To look for caribou one has to choose those mountains where vegetation such as the caribou feeds on grows in abundance. They are very fond of a peculiar white moss, and are generally to be found on mountains that have many patches of snow still unthawed on the south side during the heat of the day. It is common to see as many as six lying on a small patch of snow, trying to get somewhere out of the way of the "caribou fly," which is plentiful and troublesome in these regions. I have shot several of these fine animals, and been at the death of others, but have never seen a larger one than was killed this year by my friend, Mr. de L. It measured from the nose to root of tail six feet eight inches; the length of horns forty-one and a half inches; had thirteen tines on each horn; was seven and a quarter inches in circumference above the large tine, and twenty-nine and a half inches in span.

From caribou shooting we go to the goat. I have no doubt others as well as myself have read, and read frequently, that the goat of the Rockies gives little or no sport to the hunter. To my mind this is a mistaken idea. I have killed all kinds of big game in the Rockies, grizzly bear included, and no animal worth going after gives the hunter more dangerous climbing than an old billy goat. Mr. de L. and I killed eleven this season, and I don't believe one out of the lot were below an altitude of 4,000 feet. The vitality of this animal is marvellous. An old nanny, with a pair of exceptionally good horns, was coveted by my friend this year. Leaving the level ground where he was hunting caribou, he commenced rather a stiff climb up a steep mountain, vowing he would get these horns if possible. Arriving within about 160 yards, and as near as he could get, John handed him his .500 express. Fives times he fired and hit the old nanny, and still the brute slowly jumped from rock to rock, the blood oozing from almost every part of the body. Twice again he hit her with a .44 Winchester before she came toppling down. The horns of four of our goats measured ten and a half inches in length.

A few days of severe and tedious travelling brings us to a country teeming with sheep. September 20th I shall not soon forget. It was our first day after big horn this season. Going out about 9 a.m. Mr. de L. and I with John walked up the gravelly bed of a small creek, stopping occasionally to look with the glasses at the grassy slopes directly under the rocks and above the timber limit, as this is where sheep generally feed. We had not been long walking, when John gave us to understand he saw four sheep. Deciding amongst ourselves the best way to stalk them, away we went up the mountain side as if climbing was a pleasure, and easy work. However, before long we were obliged to check our pace and proceed with more caution as the rocks were becoming dangerous, finally we got above our game, but failed at first to obtain a good position to shoot from. The ledge of rock we were on was narrow, and below us, it was at least

sixty feet to the bottom. A bighorn coming into view, made Mr. de L. bring his rifle to the shoulder, whilst I held him from behind, the bullet hit the animal, but it disappeared behind some small fir trees, and was lost to view. I got three shots at a smaller sheep, as it was going off, and saw that my last shot rolled him over. Mr. de L. getting in a better position, got two long shots at a very fine old ram, sending both bullets home, the ram only got a few yards further when it lay down and died. Sending John after the big horn Mr. de L. first hit, he soon caught sight of it, and firing, brought it down. The horns were badly smashed in the rolling down the rock, which spoilt a very fine trophy. Going down to examine the old ram, which proved to be a very splendid animal, we found it to measure, as it lay, five feet one inch from root of tail to the nose, and the horn at the base sixteen and a half inches in circumference. A severe snowstorm and the illness of our guide prevented us from doing any more sheep shooting for some days, when we killed two very fine ewes.

September 28th.—Mr. de L. took John with him, leaving camp about one o'clock, and returned about four with a very fine three-year-old head. One shot did the work at sixty yards.

September 29th.—Horses were packed, and we were ready to move further south when our man informed us he had seen a number of sheep grazing close to our camp. We had the saddles removed from our horses, turning the latter loose to feed. Mr. de L, myself, John, and his two brothers, formed the party to go after these sheep, John and his brothers taking horses to fetch in the heads and meat. We found on nearing the locality of the sheep, wind was unfavorable and very careful stalking had to be done to get within range. Seeing some rocks between us we endeavored to reach them in order to get a favorable shot; by crawling slowly we gained this advantage. Mr. de L. firing his first barrel at a sheep some forty yards off, killed it instantly; his second shot wounded another so badly, he considered it useless to fire again, devoting his attention to others that were fast making for the mountain adjoining. There were at least fifty sheep of all sizes in this herd. We called on our men to use their rifles, and for some time any one in the distance would have been justified had they mistaken our fusilade of shots for a small war. As the sheep got to a higher elevation the sport became more interesting, occasionally an enormous ram would come pitching over the precipitous rocks above us and roll dead at our feet. Not until after the sheep had disappeared from view did the firing cease. Mr. de L. and I then filled our pipes and looked over the "bag," counting eleven as they lay, picking out the largest horns of our own shooting for removal to camp, the Indians seeing that none of the meat was wasted. An hour or two after we had left John told us three more sheep came rolling dead off the mountain; this made a total of fourteen sheep killed in one afternoon, and a grand total of nineteen killed in five days. From this the reader may conclude Rocky Mountain sheep are easy to get. But in any such conclusion he would be far from the truth. The ewes especially are most wary, and have always a watch over the valleys below them. Let the hunter be most careful in making his camps in a sheep country, nor allow big blazing fires, nor excessive chopping of wood. The bells should come off the horses before turning them loose, and the dogs tied up for the night. Should this precaution not be taken, a porcupine is almost certain to be treed, and your dogs barking all night at the unfortunate animal will, of course, give the alarm to the sheep in the neighbourhood.

It was in October we returned to civilization, having had very good sport, unbroken by any serious accidents to ourselves or our horses, with the exception of one very old horse that died.

The Sumach.

BY R. H. CAMPBELL.

The Sumac, Sumach, or, as it is often popularly called, "shumac," for which pronunciation there is authority, is a well known straggler along the highways and byways, and as its name has come down to us from the Arabic through the French it has apparently accompanied the journeys of mankind through many different ages and scenes. The Romans knew it under the name of *Rhus*, and this has been adopted as its cognomen in scientific classification. The species most commonly distributed in Canada is *Rhus typhina*, the Staghorn Sumach, and anyone who has examined the horns of a stag in the velvet will easily guess how the name was suggested by the branches densely covered with reddish velvety hair. The tree never attains a large size, ten to thirty feet, and the wood is of no value, although small ornamental articles are made of it. The wood is described as orange-colored, but it has rather more of a green tinge. In fact it might be considered as a blending of the orange and the green, a somewhat unusual, though in this case, harmonious combination. The leaves are very large, consisting of eleven to thirty-one leaflets, long, pointed and serrate on the edges, dark green above and paler beneath. The flowers are yellow and arranged in lengthened panicles or clusters, and are polygamous, i.e., the male or staminate flowers and the female or pistillate flowers are in separate bunches on the same plant. The fruit is a globular nut inside a coating covered with crimson hairs which has a strong acid taste. The fruit is neither useful nor palatable, but it supplies that sharp, sour taste for which there is sometimes a craving and may be chewed without ill effect. Its deep rich red is very effective against the dark green of the leaves in the later summer. But it is in the fall of the year that the Sumach puts its glory on. Blushing into flaming scarlet it forms the most brilliant bit of coloring of the autumn landscape, outshining the most highly-tinted of the maples, but blending harmoniously into the gorgeous picture which the fingers of the passing summer have fashioned and which forms the greatest glory of the Canadian woods.

There are three other harmless species which are found in Canada: *Rhus glabra*, similar to the above, except that it is glabrous or smooth; *Rhus capellina*, a dwarf species; and *Rhus Canadensis* or *aromatica*, with leaves of three leaflets, rhombic-ovate in form and fragrant when crushed. The Dwarf Sumach has been found in only a few localities, but the other two species are more widely distributed.

The black sheep of the *Rhus* family are the poison sumach, also known as poison dogwood, poison ash and poison elder, *Rhus venetata*, which has been found only in one or two places in Western Ontario, and which may be distinguished from the harmless species by its smooth and entire leaves; and poison ivy or poison oak, *Rhus toxicodendron*, the specific name meaning "poison tree," which is found practically everywhere, especially in rocky places, sometimes only a small shrub but often climbing up to a considerable height. The leaflets are three in number, broad, usually pointed and irregular in outline, and the clustered fruit is berry-like and green, striped with lighter color. It is frequently, though unnecessarily, confounded with the Virginia creeper, the distinction between them being clearly marked by the five leaflets of the latter placed in circular form. Our illustration shows the poison ivy growing in a characteristic situation and a close look at the lower part of the centre of the picture will show a leaf of the Virginia creeper.

The poison of the ivy is peculiar in its action, as some persons are not affected by it at all while in others a most irritating eruption is caused, breaking into blisters and very annoying and disfiguring when transferred, as it frequently is,

from the hands to the face. It is most active when the surface with which it comes in contact is wet, a fact which is well substantiated by the trying experience of a camp of boys, of which I was a member in the years that are gone, who ignorantly tramped through this pernicious plant after swimming and had to add doctor's bills to the expenses of their trip, besides suffering great discomfort. The belief is popularly held that the poison will show its effects year after year at about the same time, but on my mentioning this to the family physician, the idea was firmly rejected, and the facts adduced from experience and hearsay were designated as merely instances of incorrect diagnosis. It is quite certain, however, that any person badly poisoned is much more easily affected by it for some years after. Another popular belief is that the poison may be transmitted without actual contact, and I have myself been affected by it when I was absolutely positive that the plant had not come in contact with me in any way. The oil which contains the poisonous principle has not, however, been found to be volatile. On the other hand, there are reports of cases of persons sleeping in the same room with goods newly covered by Japanese lacquer made from *Rhus vernicifera* who exhibited all the symptoms of poisoning next morning.

A remedy, simple and easily obtained, is a solution of acetate of lead (sugar of lead) in vinegar applied to the parts affected, but it is itself poisonous when taken internally and should be handled carefully. Other remedies are an alkaline solution of lime water, ammonia and hyposulphite of sodium, decoctions of white and black oak bark, Virginia snake root, chestnut leaves, etc. Among the domestic remedies vinegar and solutions of saleratus and carbonate of sodium are considered highly, while buttermilk is esteemed as of great virtue. Our enterprising Japanese friends strike out a special line of remedies of their own and go in for pounded crabs.

It is hardly conceivable how some ideas originate, but it may be well to mention the notion that a decoction of the leaves of this plant taken internally will counteract the effects of the exterior action of the poison. The only case reported in which anyone was foolish enough to try this remedy was with great difficulty saved from fatal results. Even our homœopathic friends would admit that this is pushing too far the doctrine that "*Similia similibus curantur.*"

The Arboretum.

BY W. T. MACOUN, CURATOR.

Although several of the other important British colonies had been setting us a good example for many years, no successful attempt had been made to establish a National Arboretum and Botanic Garden in Canada previous to 1886. A good opportunity occurred, however, when the Dominion Experimental Farms were organized; and, when the Central Experimental Farm was purchased in 1886, sixty-five acres were selected for an Arboretum and Botanic Garden on the east side of the Farm. The site chosen was a good one, as most of the land is high and a fine view is obtained of the city of Ottawa on the north and east, while to the south there is a pleasing view across country with glimpses of the Rideau River in the distance. The Arboretum is bounded on the south side by the Rideau Canal, which at this point has marshy banks, that take away much of the sameness which the canal would otherwise have and also affords a splendid opportunity for testing aquatics, though little has yet been done in this direction.

The Arboretum and Botanic Garden has developed so rapidly that, although the first planting was done as recently as

the autumn of 1889, a collection of trees, shrubs, and herbaceous plants has been brought together since that time, which, as far as the number of species and varieties is concerned, will compare very favourably with some of the oldest established Arboreta and Botanic Gardens in the North Temperate Zone. The original plan was to arrange the trees, shrubs and herbaceous plants in their proper botanical order. This has in a measure been adopted; but the number of species and varieties which it was found could be obtained, has made it impossible to keep all plants of one genus in a single group, and in some cases even three separate groups have had to be made. Furthermore, in many cases the soil was not suitable where a certain genus would come if kept in the regular sequence, and it was thought better to plant the trees which would succeed in wet soil in that kind and reserve the drier parts for those which would not; in like manner, to use the heavy clay and sandy loam soils for those trees and shrubs which would be most likely to succeed in them. This arrangement, however, has not always been possible. Up to the present time little has been done with a view to landcape effects in the Arboretum. The place is beautifully situated, and great improvements could be made by the judicious planting of masses of shrubbery and clumps of trees for this purpose. There is, however, no special grant for the maintenance of the Arboretum and Botanic Garden, what money is spent being taken from the Experimental Farm vote. It has, therefore, been thought that the best use that could be made of the money available, was to make the collection as large as possible, keep the place in order, and leave the ornamental planting until later.

The trees and shrubs are, in most cases, planted far enough apart to permit of their developing into full-sized specimens without being crowded by each other.

One of the prominent features of the Botanic Garden is the herbaceous perennial border, which is situated on the east to south-east side of an Arborvitæ hedge, which serves as a great protection from the wind, helps to hold the snow in winter and is a fine dark background to the flowers. This border is 12 feet wide, and the plants are set in rows three by three feet apart. This distance has made it possible to keep the different kinds separated, and renders cultivation easy. The Arboretum and Botanic Garden was in charge of Dr. James Fletcher, Botanist and Entomologist to the Dominion Experimental Farms, from the time it was laid out until the spring of 1895, when the work was undertaken by the writer, who, in the spring of 1898, was appointed Curator. From the first, Dr. Saunders, Director of the Dominion Experimental Farms, has taken a keen interest in the work; the planning of the grounds and the procuring of plants and arrangement of the material has been done in conjunction with him.

Twelve years ago, when the first planting was made, comparatively little was known of the hardiness of a large number of trees, shrubs and herbaceous plants, as the number of species and varieties found in gardens was limited. In 1889, 200 species and varieties of trees and shrubs were set out, and by the autumn of 1894 about 600 were being tested; up to the present time 3,728 species and varieties of trees and shrubs have been tested, and about 4,500 specimens were living in the autumn of 1901, representing 2,871 species and 185 genera. Of herbaceous perennials 1,586 species and varieties were living in the autumn of 1901, making in all a total of 4,457. This large collection has been obtained from many sources. From donations of seeds from Botanic Gardens throughout the world, a large number of species and varieties have been grown, the Royal Gardens at Kew supplying many of them. The catalogues of nurserymen in America, Europe and Asia have been searched to increase the collection, until now it is difficult to obtain additional species of many genera. As far as possible, two specimens of each species of tree and shrub have been planted; but there are so many cultivated varieties that in many cases only one specimen of each of them has been utilized. At first, three

specimens of each kind of herbaceous perennial were planted, but for the same reason the cultivated varieties of these are usually limited to one, unless it is unusually attractive.

Nearly all the Arboretum is now seeded down to lawn grass and this is kept cut with a pony lawn mower. These large lawns add very much to the attractiveness of the place. In order that the trees and shrubs will not suffer by growing in sod, circles are kept cut around them and the surface soil is loosened with the hoe. Most of the specimens are neatly labelled with a zinc label fastened to a stiff wire which is pushed into the ground near the specimen, and as fast as possible duplicate labels are being written and attached to them as the others get cut off or broken off from time to time, rendering identification somewhat difficult. Each label bears a number which corresponds to a number and name in the record book.

Every year the trees and shrubs are examined and notes are taken on each individual specimen. The principal notes recorded relate to the hardiness and growth of the plants. The dates of blooming are also recorded, as far as possible. The work entailed in recording notes on 4457 species and varieties of plants in the Botanic Garden is very considerable. The data accumulated every year are becoming more and more valuable and reliable.

In 1899 a catalogue of the trees and shrubs which had been tested in the Arboretum was published conjointly by Dr. Saunders and the writer, which has been received very favorably by those engaged in botanical work. In this catalogue the scientific names of the trees and shrubs are arranged alphabetically, and, when a species or variety has a common name, this is also given. The countries are named, of which the trees and shrubs are native, also the year in which they were planted. In compiling this work, the nomenclature and classification of the "Index Kewensis" and the "Kew Guide" were adopted. The name of the species or variety is printed in bold faced type, followed by the author's name in small capitals. The term "Hort." indicates a garden or gardener's variety. Synonyms of genera and species are printed in italics. The common names given are those found in the leading botanical works of modern authors.

While a large number of synonyms have been recorded, it is probable that there are still included in this catalogue some which are listed as species or varieties which are really synonyms. In recording the synonyms, the names given are only those under which the species or varieties have been received at the Experimental Farm, and do not include all the known synonyms in each case. When the catalogue was published in 1899, the total number of species and varieties which had been under test was 3071. Of these 1465 had been found hardy, 330 half hardy, 229 tender, 307 were winter-killed, and 740 had not been tested long enough to admit of an opinion being given as to their hardiness. The different degrees of hardiness were fixed as follows: Hardy, when the tree or shrub had passed through one or more winters uninjured or with very slight injury to the tips of the branches. Half hardy, when the new wood was killed back one-fourth or one-half. Tender, when the wood was killed to the snow line or to the ground.

In addition to this catalogue the writer published in his report for 1897, a descriptive list of what was considered the best one hundred hardy ornamental trees and shrubs and the best one hundred herbaceous perennials, which has proven very useful to those who desire to improve their grounds. In the writer's report for 1898 a short additional list of herbaceous perennials is given. In the report for 1899 are another short descriptive list of perennials and a descriptive list of twenty-five of the best low growing flowering shrubs. The report for 1900 contains descriptive lists of the best woody and annual climbers, and that for 1901, a descriptive list of the different species and best varieties of lilacs.

Some further notes regarding the trees and shrubs may be of interest.

As examples of how largely some genera are represented, I may state that there were growing in the autumn of 1901 in the Arboretum:—

220 species and varieties of *Pyrus*.

134 of *Prunus*, 93 *Lonicera*, 89 *Ulmus*, 110 *Acer*, 155 *Syringa*, 121 *Salix*, 75 *Berberis*, 100 *Quercus*, 66 *Picea*, 80 *Cratægus*, 92 *Fraxinus*, 64 *Thuya*.

Canadian trees and shrubs have been thoroughly tested, and are well represented. All of the trees mentioned in Prof. John Macoun's paper on "The Forests of Canada and their Distribution" having been tried, with the exception of a few western species which have not been given a thorough trial as yet. Among these are *Salix scouleriana*, Baratt; *Pinus flexilis*, James; *Pinus albicaulis*, Eng.; *Pinus monticola*, Dougl; *Tsuga pattoniana*, Eng.; *Tsuga mertensiana*, Carr.; *Abies grandis*, Lindl.; *Abies amabilis*, Forbes.

Of Canadian trees which have been thoroughly tested, the following have not proven hardy:

Asimina triloba, Duval (Papaw). This has killed out root and branch.

Liriodendron tulipifera, Linn. (Tulip-tree). The tulip-tree kills to near the ground every winter. A variety of this species, however, *integrifolia*, imported from Berlin, Germany, in 1897, has proven hardy for the past three years.

Cercis canadensis, Linn. (Judas-tree or American Red-bud). The tree now living in the Aboretum was planted in the autumn of 1896. That winter it killed to the ground and only made weak growth in 1897; the next winter it killed back ⅔, the third ½; the fourth winter it was almost hardy to the tips, and it was also the same last winter. This is a good example of the acclimatization of trees.

Cornus florida, Linn. (Flowering Dogwood). One specimen of this tree was practically hardy from 1897 until last winter, when it killed to near the ground. Other specimens were not as hardy.

Nyssa sylvatica, Marsh (Sour Gum). The tree now living was planted in the spring of 1897; the first winter it killed back ½, the next ½, the third it was hardy nearly to the tips, and again the same last winter.

Sassafras officinale, Nees, (Sassafras). This has killed out root and branch thus far, though it has not been as thoroughly tested as some of the others.

The following other trees peculiar to south-western Ontario, appear to be hardier than the above, and some individual trees are perfectly hardy.

Platanus occidentalis, Linn. (Buttonwood).

Castanea sativa, Mill, var. *Americana* (Chestnut).

Fraxinus quadrangulata, Michx. (Blue Ash).

Gleditschia triacanthos, Linn. (Honey Locust).

Some of the rest, such as *Gymnocladus canadensis*, *Cratægus Crus galli*, *Pyrus coronaria*, and *Juglans nigra*, are quite hardy.

A few of the coast trees of British Columbia kill out root and branch, among such being *Acer macrophyllum*, *Arbutus Menziesii*, *Cornus Nuttallii* and *Quercus garrayana*.

It is interesting to note that, out of the list of 121 species of native trees published by Prof. J. Macoun, about 100 have proven hardy or half hardy here, and the writer has no doubt that, when all the species are tested, there will not be more than ten which can not be grown at Ottawa.

The question of the acclimatization of trees, shrubs and plants is a very important one, and one in which there is a good field for work at the Central Experimental Farm. I have mentioned a few instances where native trees have gradually become hardier after being planted several years. It might have been further stated that other specimens of these had been killed out root and branch. These furnish excellent examples of the individuality of trees. We have noticed over and over again in nursery rows, that some trees of the same speeies are hardier and more vigorous than others. It has also been noticed that a tree which has a wide range from north to south, will not be as hardy when imported from the south as from the north. An excellent example is the Red Maple, *Acer rubrum*. This tree, imported from some parts of the United States, has killed back and made scrubby trees, while from further north it has done well.

There is no doubt, in the writer's opinion, that many trees which we have great difficulty in getting to fruit here, will eventually be much hardier when raised from seed ripened at Ottawa.

Much could also be said and written of the herbaceous perennials which make such an attractive and useful feature of the Botanic Garden from early spring until late autumn. The collection is growing rapidly, and the information regarding the different species and varieties when grown in this climate is getting more valuable every year

The Arboretum and Botanic Garden is a public institution and should be made use of by the public. Every assistance will be fully given to those who desire to study the plants growing there, and it is hoped that this paper will induce some of the members of the Ottawa Field Naturalists' Club to make a closer study of trees, shrubs and herbaceous plants in cultivation than they have done in the past.

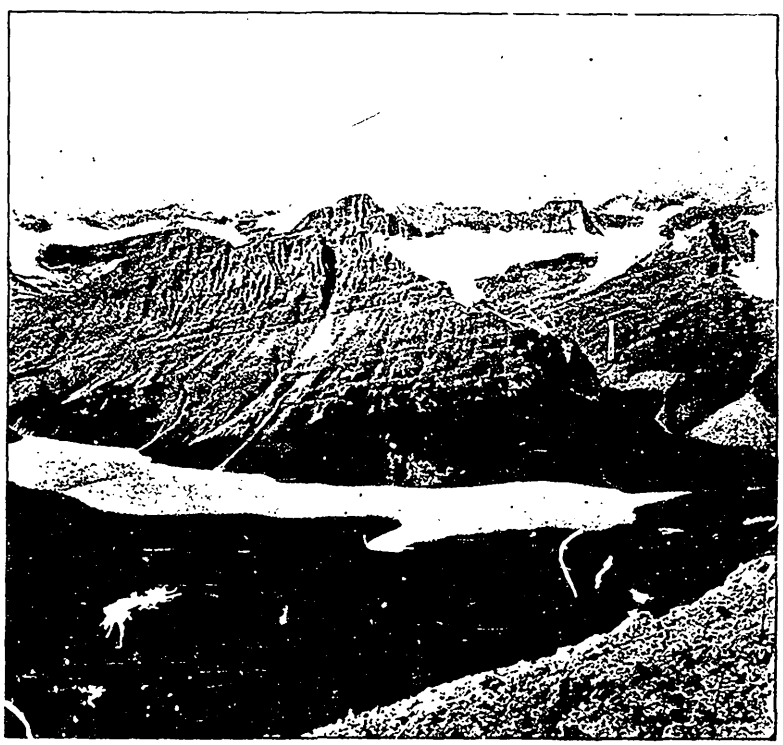
Contributions of plants and seeds, especially of rare Canadian species, will be gratefully received, as the desire is to increase the collection as rapidly as possible, and to have the native flora well represented.

Preparation vs. Faking.

BY "FANCY."

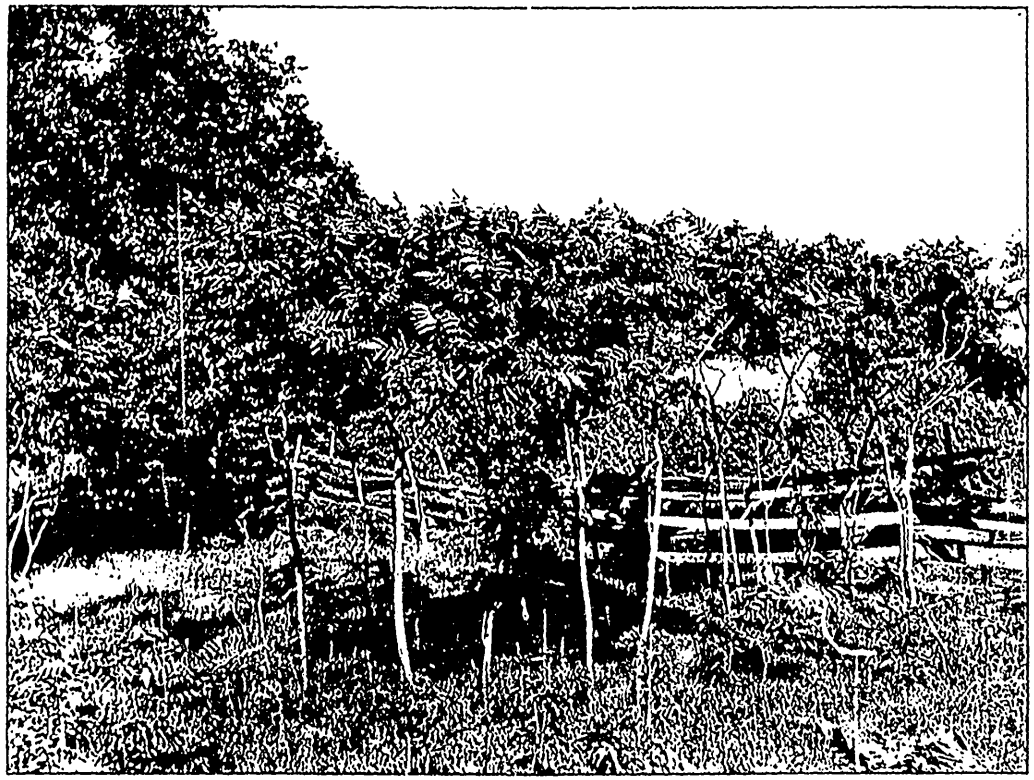
When the time comes for preparing a dog for exhibition at a bench show, the owner, if he knows the man who is to "look over him," and aware of his weakness or partiality for certain points in the dog's conformation, is anxious, of course, to meet the judge's views as far as he can within certain limits. This has led, in only too many instances, to the process of "faking" certain parts of the animal's anatomy in order to gain a favorable verdict, and there is no practice, I may at once admit, more reprehensible. The practice is condemned by every honest exhibitor, and has been legislated against by every Kennel Club in the world. The penalties provided by the latter are severe, and in the event of discovery disqualification of both owner and dog follows, the former for a time or for all time, according to the enormity of the offence. Still faking is carried on, and it frequently happens that it is unobserved by the judge, who may have large classes to go through, and who is thus made to render a wrong decision. A rival exhibitor, of course, has the right to protest, if he happens to become aware that unnatural tampering with the dog has been done, but as a general thing the majority do not care to run the trouble and expense of following up a protest, and so a miscarriage of justice follows the wrong verdict.

But there is a wide difference between faking and expert preparation, and I hold that every exhibitor, if he knows how, has a perfect right to put his dog in the show ring at his best natural appearance. This can only be done by judicious combing and trimming for the removal of all dead or superfluous hair. The *modus operandi* does not hurt the dog, no more than the removal of tangled locks or a week's growth of beard from a man, and we all know the improved appearance of the subject fresh from the barber's chair. It is essential that the combing and trimming should be done in a workmanlike manner and within reasonable bounds, a little at a time and at intervals. The expert handler, who knows how to improve his dog properly in this way, is almost certain to come out ahead of the man who neglects such treatment, as a neglected coat may often hide a better formed dog. But it takes an expert to know the fine points of the game, because a slim boned dog may suffer from the manifestations of a too zealous amateur. It is quite legitimate also to assist the proper carriage of a dog's ears, for instance a collie's, if done in a proper way, without pain to the animal, but the breaking of a "prick ear," that it may assume a semi-erect position, ought to meet with severe punishment.



PEYTO LAKE.

Taken from the summit of the Bow Pass, by A. O. Wheeler, D.T.S.



THE STAGHORN SUMACH.

The brilliant leaves of *Rhus typhina* add much to the brilliancy of the Canadian woodlands in autumn

Moose Hunting.

BY J. C. CONROY.

When the leaf on the northern birch begins to turn yellow, and the wild duck reappear after passing the nesting season in the arctic lands, where instinct tells them they may alone rear their broods in safety, the big game hunter begins to feel the old feverish longing, or as Kipling has so truly put it, he hears the call of the Red Gods. Fortunately for Canadian sportsmen, they have not far to go to reach the land where moose, without any stretching of the truth, may be said to be abundant. In Northern Ontario the big, black bulls—Diana's cattle—are, probably, more abundant to-day than when the white man first forced his way into these solitudes. Then innumerable bands of roaming redskins lived off the land; they tilled not, neither did they reap, yet the ridge poles of their lodges bent under the weight of provender the flint-tipped arrows had secured. The Indian has practically passed away, for the few yet remaining have little effect upon the game supply, and it was only the other day that the Ontario Government threw open its great preserves upon terms that make moose hunting therein possible. Previous to last autumn the law barred the way. Only once in every third year could a sportsman shoot his moose lawfully; even then, in order to do so, he had to brave the rigors of the north at a time when none but the foolhardy would care to be abroad, for a single night's frost could so seal the waters as to cut off the retreat of an isolated hunting party.

Now, on October 16th, when the forest is blazing with the gorgeous hues of autumn, the hunter may step forth, rifle in hand, confident of finding the grandest prize that can fall to his aim on this continent, the bull moose in his pride, with antlers wider than a tall man's span, and a bell as patriarchal as the beard of a Moses.

The moose inhabits a country 3,500 miles in length, and having an average width of 500 miles, yet in all this vast region it is not probable that they are anywhere more abundant than in the territory on each side of Canada's great transcontinental railroad between Sudbury and Rat Portage.

There is no great object in going very far from the railroad; twenty miles may well be as good as fifty, and fifty sometimes better than 100. The things that determine the abundance of moose are seclusion, and an absence of their natural enemies, and there are many places within ten miles of the railroad that are as secluded as the centre of the Sahara itself, and as to their enemies they have but three: man who preys indiscriminately on bulls, cows and calves, and the grey wolf and the black bear, who, as a rule, give a wide berth to the adult animals, though they take a heavy toll of the young.

Missanabie is a good outfitting point; here there is a Hudson's Bay store, where all things essential to a life in the bush are procurable, and where Indian hunters may be met by an appointment made through the officers of the Great White Company. This is not to say that there are not other points as good. There is room for a hardy explorer, and the man who desires to combine exploration with sport could not find a better region. Even the latest government maps are singularly inaccurate and vague; many a lake yet remains to be named; many a stretch of noble pine forest has not yet been looked over by a white eye, and as to the mineral wealth of the country, the promise of vast deposits is good, many believe better than in almost any other part of the continent. Nickel, iron and gold have already been found, and if we may credit the predictions of geologists, the day is coming when the most precious gems will undoubtedly be won from the gravels that overlie the old Laurentian and Huronian rocks of Western Ontario.

The moose hunter's outfit need not be an expensive one, and it must not be a

ponderous one. Everything that he takes with him will have to be carried on his own shoulders or on those of his men, over rocky portages, and through mossy barrens, so that the part of true wisdom is to cut necessaries down to their lowest limit, and to leave all luxuries behind. One thing he must have, and that is a good Winchester. He may please himself as to whether he will use the old-fashioned black powder models, shooting a heavy death-dealing bullet, or one of the new nitro-powder weapons, that make up by the velocity of their projectiles what they lose in crashing power. Another requisite is a good field glass; if the white man had the eye of the Indian, he would not need this latter aid, but would have a pair of telescopes ready for use that he would have inherited from a long line of hunting forbears, but unfortunately the disastrous effect of civilization is more apparent on the eye than any other organ.

Of blankets, two heavy pair of four-point Hudson's Bay coverings are sufficient at this season of the year, though in the dead of winter it is hardly possible to have too many in camp.

All provisions should be packed in canvas bags. Paper is a poor material to use in the bush. Tents may be either open, such as the Indians themselves use when hunting in the fall of the year, or closed, as the white man usually prefers; only in the latter case a small, portable, sheet-iron stove is to be recommended, as otherwise the blood-curdling chill of a dew-damp canvas covering will be felt most unpleasantly on cold mornings.

Any moose head spanning more than 48 inches is considered a good one. One fortunate sportsman killed a moose in the Kipawa region, whose head spanned nearly 63 inches—this head, by the way, has been on exhibition in Toronto at the Dominion fair grounds—and each season a few moose are brought in with heads that measure from 55 to 60 inches.

Bay of Quinte Bass.

BY WALTER GREAVES.

I returned recently from a three weeks' visit to Belleville, during which time I enjoyed several pleasant days on this Bay, boating and fishing, or I should say, trying to catch fish. I visited many of the places where black bass used to be plentiful a few years ago, and where one could catch, with a fly, as many bass of about two or three lbs. as he could possibly wish for. From my recent experience one would starve if he had to depend on his catch with a fly in the Bay of Quinté waters. Netting, I understand, is the cause of this. It is a shame that this sort of thing should have been allowed, as one would not find a finer water for black bass than the Bay of Quinté. There is a good hotel at Massassaga Point, close to the best fishing ground,—this is four miles from Belleville, reached by a nice little steamer, the "Annie Lake," at 25c. the round trip, and there is an excellent hotel, "The Quinté," in Belleville, which would no doubt be well filled with Canadian and American anglers if the fishing were what it used to be. Good row boats are plentiful in Belleville and at Massassaga Point. A petition is now being circulated in Belleville with a view of endeavouring to stop the netting, and if it meets with success I am sure the Bay of Quinté will afford excellent sport again within a few years, and that there will be quite a rush of anglers from all parts of the country.

The largest bass I took during my recent visit was one of three pounds, which I took on one of my "Massassaga" bass flies.

Collies as Workers.

BY D. TAYLOR.

In most country districts of England and Scotland the collie is trained to a high state of perfection, in the working of sheep, and his value to the shepherd, on the heather hills of Scotland, especially, is the highest possible. Indeed, the shepherd's task on the Grampian range, or on the sheep farms of the northern and western Highlands, would be an impossible one, were it not for the assistance of his intelligent canine friend. It is the dog that keeps the sheep from straying, rounds them up, and drives them to the shelter of the fold in the evening. In many localities there are annual trials of skill, the shepherd and his dog coming from far and near to participate, and the trials are of the most interesting description to the spectator. The dog has to collect and drive a small flock of sheep through various obstacles into a pen, with no other assistance from his master than a word or sign, and much berating or bidding detracts from the estimate of the dog's performance.

In Canada and the United States such trials are almost unknown, but a start will be made next year, under the auspices of the American Collie Club, at St. Louis. The rules governing contests of this kind in the Old Country will be pretty closely followed, the number of sheep allotted to each dog being five, and of course a different flock will be given each dog. Each shepherd may take his dog over the ground previous to the sheep being brought in, and show or direct him what he wants done. Tractability, ready obedience, steadiness in driving, gentleness in working the sheep, and general aptitude in the dog for the business before him, are the factors in judging. After the regular trials are completed, a shepherd will have the privilege of showing the good points of his dog by choosing his own kind of work, and he may also show the training of his dog for other practical purposes as a farm or house dog.

There is a widespread belief that the breeding of the collie for show purposes has affected his intelligence, and rendered him unfit for the work which his high natural attainments, docility and activity so admirably adapt him. This may be true in instances where close inbreeding has been resorted to, but in the majority of cases the dog is improved, both mentally and physically, by proper mating, and, if subjected to a course of training while young, there should be no difficulty in making the show dog a perfect worker. The trouble is that nearly all the dogs fit to win are in the hands of those who have not the facilities nor the time to devote to a regular system of training, and the consequence is, that the dog's natural intelligence is dormant from lack of opportunity to bring it out.

The Canadian farmer, as a general thing, is content with any animal in the shape of a dog; his antecedents are not closely enquired into, and he is only allowed to hang around the premises on sufferance, his utility as a herder of cattle or sheep seldom being thought of. Yet, a little patience at the right time, and with the right kind of a dog, would give the farmer a valuable help, a help that could not be duplicated by the employment of a "haflin" at a considerable outlay for wages. In this economic age, every cent saved is so much earned, and if the small cost of keeping a dog is put against his usefulness in many kinds of work, the balance will lean heavily to the dog's side.

I have no doubt, however, these projected sheep trials will interest a large number of collie breeders, and prove an incentive to them to educate their dogs for various useful purposes. Can't we have similar trials in Canada? What about the Canadian Kennel Club, which has recently developed a strenuous progressiveness, taking the initiative in this matter?

Seals and Sealing.

BY C. J. CARLETON.

The hair seal's chief home is in the North Atlantic, and although he has not attained to the political prominence of his brother the fur seal, he is as equally important to the naturalist. His domain is extensive. He is found on the coasts of the British Isles and those of Europe, and abounds in almost inexhaustible numbers off Newfoundland, Labrador, and in the Gulf of the St. Lawrence. All nations send their ships in search for him. The Russian hunts for the pinnapoids in the Caspian and on the White Sea; and Danes, Norwegians and Scotch whalers, wander over the Arctic regions for the *Phoca greenlandica*.

It was John Cabot who, shortly after the accession of Henry VII., discovered that in these western waters there were uncountable quantities of fish of every species, and who brought back to England marvellous tales of their variety and quantity, and also of their comparatively easy capture. At a time when the Old World was waking to the possibilities of the New, these accounts did not appear incredulous, and, in fact, they founded an industry which is still a source of great wealth to many to-day. The great herds of seal and walrus, and the numerous white bears which existed on the shores of Newfoundland in the fifteenth and sixteenth centuries are now only to be found in the far off Arctic regions. The first result of the discovery of North America, and, in fact, the only result for over a hundred years after, was an immense fishing industry carried on by almost all the nations of Europe. In days when there was not so much money in circulation as there is now, fish proved a valuable bartering commodity, and was often given in free exchange for wines and fruits, linen, silks, velvets, cloth, cutlery and cordage. So important did this industry become that Sir Walter Raleigh himself declared that misfortune to the fleets of Newfoundland would be the greatest calamity that could happen to England.

But it was the Spanish Basques who first developed the great seal and whale fishery of the North Atlantic. Up to 1587 there were about fifty of their ships hunting the whale, seal and walrus round the coasts of Newfoundland and the Gulf of the St. Lawrence. The dangers which these intrepid mariners had to encounter were many, and it often happened that they lingered too long in the northern seas and perished miserably. In one year we read that five hundred and forty men were caught in the ice and were frozen to death. But none of these hideous perils seemed to daunt the daring fishermen of Europe. Year after year they set sail for the home of the seal, and returned back at the end of the season heavily ladened with their rich and remunerative spoil. It was the Basques who first taught the seamen of England how to use the harpoon, which enabled them years afterwards to obtain the supremacy in this particular industry. It was with the assistance of Indians that the American whale and seal fishery on the North Atlantic was first carried on. In a few years it developed into an enormous trade, which was the source of great wealth, and also gave employment to thousands of men from the shores of New England. In the early days of the industry the settlers of Newfoundland carried on a net seal fishery; men from the shore went off on the ice and killed the seals, and frequently used large fishing boats to assist them in their work. But about the end of the eighteenth century it was found necessary to fit out regular fleets each spring to prosecute the search for the seal.

The seal, perhaps once a stay-at-home, has now learnt the habits of migration. Late in the autumn he comes south and fishes on the Grand Banks of Newfoundland. In the spring he leaves the open water for the ice fields of the north of Newfoundland and the Straits of Belle Isle. On the immense fields of ice which are formed with the calm weather of

January, the young seals are born. They are peculiar little creatures, with white coats and child-like cries. It is wonderful how the instinct of maternity has developed the power of identification. The mothers wander away great distances in the search for food, but invariably come back to the exact spot where they left their young, though the iceflow extends hundreds of miles and there are thousands and thousands of young crying for their parents.

There are five varieties of seals in the North Atlantic. The commonest, and the most valuable commercially, is the harp seal, which is succeeded in importance by the hood or bladder-nosed. The most beautiful of the whole family is that which is found all round the English and Scotch coasts, and abounds on the west coast of Ireland. He is of no commercial value, except for his skin. Young seals develop with great rapidity; when born the average weight is about five pounds, and in three to four weeks they increase to forty or fifty pounds. Beneath their skin is a beautiful coat of white fat from three to four inches thick. The youngsters are nurtured by their mothers for about five or six weeks; when the fat is at its very best commercial value. It is at this time that the hunters arrive on the scene, and the young are quickly despatched by a blow on the nose from the gaff. The skin and fat are then separated from the carcase. Sometimes the whole catch is made in one week, and ships have returned within that time with forty-two thousand seals. A good year at the present time generally totals about three hundred and twenty thousand.

The Foothills Timber Reserve.*

In the early part of the year 1899, a Timber Reserve covering the eastern slope of the Rocky Mountains from the International Boundary north to the Bow River, was set apart with the object of protecting the watershed, which is the source of supply of the rivers tributary to the South Saskatchewan, that furnish the waters required for the extensive irrigation works in Southern Alberta. A glance at the map will show the streams heading in the Rockies which traverse this semi-arid district, and the absolute necessity for a regular and continuous flow throughout the growing season is clear to anyone with a knowledge of the country and of the insufficiency of the rainfall for the production of general crops, particularly in the dry years, a succession of which may be looked for at any time. Recognizing this fact, irrigation surveys on a large scale have been undertaken by the Dominion Government, and large and expensive works have been projected by private enterprise, and the question of water supply is one of the greatest moment, and which must here be given a larger share in the consideration of the subject of the protection of the watershed than almost anywhere else in Canada.

The decision, therefore, which has recently been announced that this reserve is to be thrown open to be granted under timber license is one of grave importance, and the possible results of this action on the future of the country affected should be thoroughly weighed. It may be explained that the timber on the lands reserved could be taken under a settler's permit any time, the reserve only prohibiting the granting of licenses and permits for the cutting of timber for sale. The grounds upon which the withdrawal of the reserve was asked are that the timber requirements of the people along the plains bordering the foothills could not be met by each settler taking out his own timber, the distance rendering this a great inconvenience or an impossibility, so that there was a necessity for regular operators to go in and prepare the lumber supply. In opposition to this it is pointed out that

* Contributed by the Officers of the Canadian Forestry Association.

the larger portion of the supply for this district and the best lumber comes from British Columbia.

The removal of the mature timber, carefully done, will probably not constitute a danger to the watershed in every case, but there are steep slopes from which it would be absolutely disastrous to cut out such timber with the methods which the present financial position of the lumbering industry admit of, and with the carelessness which a century of training has imbued in the lumber operators of the American continent. There is also a great increase of the danger from fire as a result of the debris of lumbering operations, and if these dangers are not guarded against there is a possibility of the repetition of the experience of France, which is now spending millions of dollars trying to replace on the water worn slopes of the Pyrenees the forests which were carelessly cleared away, and the passing of which resulted in disastrous floods and landslides causing large loss of life and property. This is no fancy picture but painful fact, and a history that can always repeat itself.

The provisions of the regulations under which licenses will be granted which affect the points referred to, are that the licensee shall not have the right thereunder to cut timber of a less diameter than ten inches at the stump, except such as may be actually necessary for the construction of roads, etc., to facilitate the taking out of merchantable timber, that he shall prevent all unnecessary destruction of growing timber on the part of his men and exercise strict and constant supervision to prevent the origin or spread of fires. In regard to permits the provision is also made that, to prevent the spread of prairie or bush fires, the refuse (*i.e.*, the tops and branches unfit either for rails or firewood) shall be piled together in a heap and not left scattered through the bush. The rigid enforcement of these regulations would do much to prevent the dangers, although the purpose sought by gathering the refuse into a heap might be better accomplished by lopping the branches in such a way as to permit the wood to fall to the ground and rot away. But it is exceedingly difficult to enforce regulations which involve expense and are not directly in the interest of the operator, unless an impossible army of officials is employed.

The tenure granted by the timber license is not a simple annual tenure, but licenses contain the provision that so long as the licensee complies with the conditions of his license and of the regulations, he shall be entitled to a renewal of his license from year to year while merchantable timber remains upon the area licensed. If the purposes of the timber reserve are carried out to any extent, this, though an indefinite, would be practically a perpetual tenure.

If the policy of throwing this reserve open to timber license is carried out, there should in the first place be an examination made of all tracts applied for before they are disposed of, so that no tract should be denuded on steep slopes and other places where even such cutting as is allowed in ordinary cases would be injurious to the water supply or destructive of the vegetable covering of the soil. Preliminary examinations are made in other parts of the Dominion, and there is no reason why it could not be done here where the necessity for it is imperative.

An increased and more effective fire ranging staff will be required, and the regulations looking to fire prevention and the protection of young growth will need to be enforced strictly.

The tenure under the license should be modified in such a way as to make clear that it cannot be interpreted as a perpetual one, and that the freedom of administration of the reserve will be kept inviolate. For the first great object of this watershed is not the supply of timber, but the supply of water, and while the one does not necessarily preclude the other, first things should be first, and the flow of water should be guarded at all hazards.

The whole subject is one of great importance, and is deserving of the most careful study and consideration.

Forest Fires and Railways.*

The dry weather of the spring and early summer of the present year brought into prominent notice the question of forest fires and the causes thereof, and important amongst these are fires starting from railway lines. These may be occasioned by sparks from locomotives or other means. The face of the country still exhibits the scars which record the conflagrations that accompanied and followed the building of the railways. And the danger is still present. The reports on forest fires in Canada compiled from year to year contain instances which establish this. During the present season many fires have been clearly traced to sparks from locomotives, and the carelessness of some railway employees is exemplified by the action reported from a branch line in a forested district where fire was set to a pile of old ties on two different occasions during the dry spell, with the result that the fire spread to the adjoining timber, causing considerable loss. This railway not only carries in lumbermen's supplies but transports timber out, and it is therefore decidedly in its interest that the forest should not be destroyed, especially on the poor, rocky land run over by the fire. Evidently the railway companies require, as a rule, to take further steps to impress on their employees the importance of care and watchfulness. With such an efficient patrol as is provided by the service of the section men, proper vigilance would be the only thing necessary to almost absolutely prevent the spreading of fire from the railway line. Even with the best preventive appliances, sparks will escape from locomotives at times. Grades are always great danger points. A thoroughly live staff of section men held up to their duty in this respect would be the most effective preventive measure.

Various devices, more or less effective, have been resorted to to prevent the escape of sparks from locomotives.

In England the railway companies hold that the use of any netting necessitates the sharpening of the blast, and therefore increases the risk of ashes being drawn from the firebox. They have therefore, as a rule, done away with spark arresters, and rely on a special arrangement of the firebox. The chief methods employed are an enlargement of the grate area, thus decreasing the necessary strength of the draft, and a brick arch which slopes backward and upward from the front of the box, and round which the flames must pass, thus increasing the distance to be traversed by the sparks and the opportunity for complete combustion.

Any person who has observed the new types of American locomotive will have noticed the fact that the smokebox extends in front of the straight smokestack. The object of this extension is to provide a receptacle for the sparks which may pass from the firebox, and at the same time to give space for an area of wire netting sufficient to prevent sparks being forced through. Any sparks that may issue from the firebox pass along the tubes running through the boiler into the smoke-box, where they are thrown downward by a steel deflecting plate, and are prevented from rising through the smokestack by the netting which covers the upper part of the smokebox. In wood burning engines the same purpose is accomplished by an inverted cone in the smokestack. The locomotive manufacturers contend that if these devices are kept in proper order practically no dangerous sparks will escape, and if regular inspections are made by the railway companies and repairs kept up the danger will be reduced to infinitesimal proportions. But old locomotives, which usually are much more in need of repairs, and have not the best appliances, are naturally relegated to the back districts, amongst which are the forested lands, so that the adoption of new types is not as much of a protection to the forest as might at first be thought.

The question of the liability of railway companies for damages by fires caused by

* Contributed by the Officers of the Canadian Forestry Association.

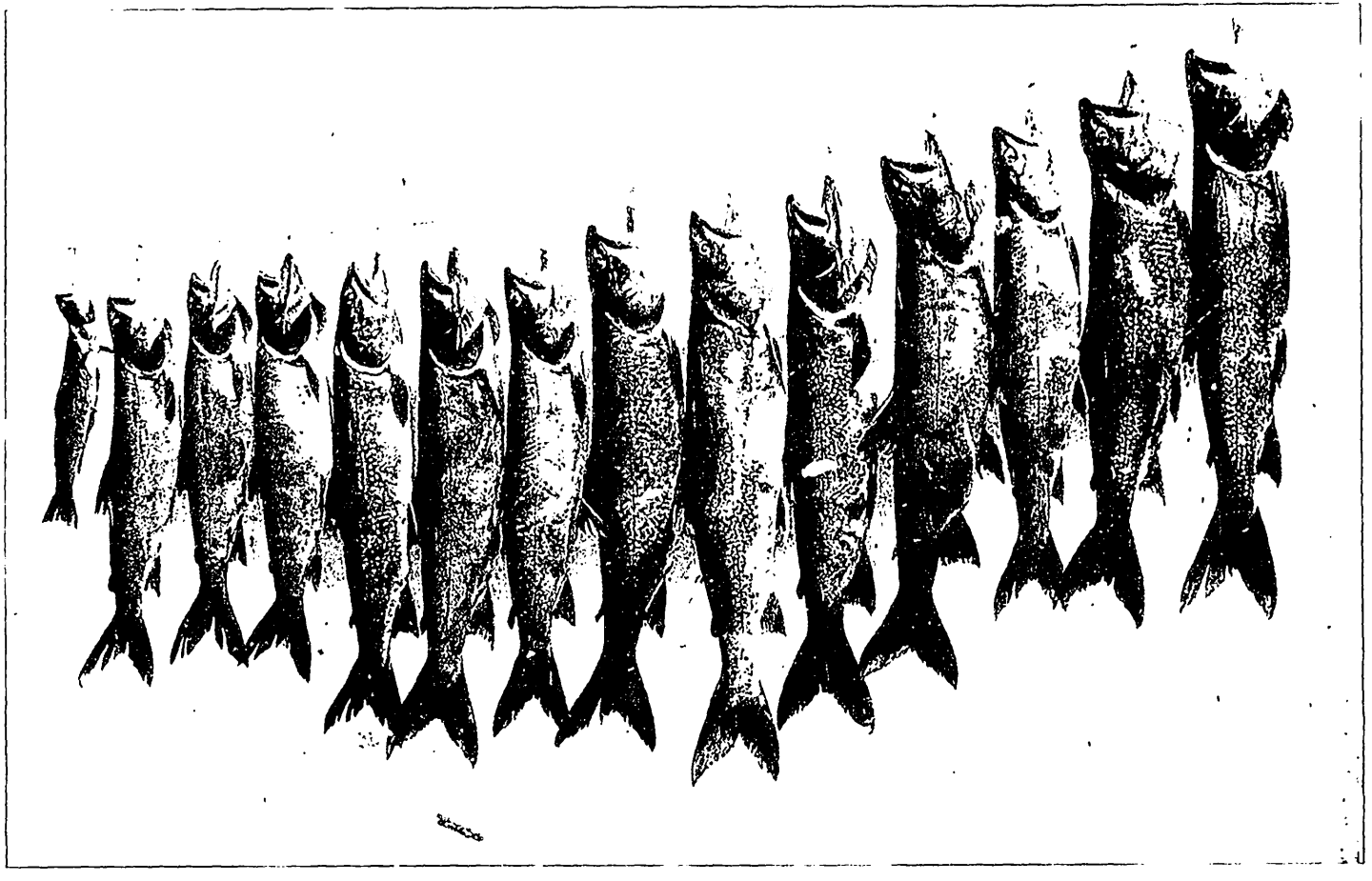
sparks from locomotives was discussed at some length during the present Session of the House of Commons, in connection with certain suggested amendments to the Railway Act. It had been held and so decided in certain cases, that actions for damages against railway companies were to be decided on the principle of the common law that no person should be permitted to use his property in such a way as to result in injury to his neighbor, but on an appeal on this point being carried to the Imperial Privy Council it was decided that inasmuch as Parliament had given the railway companies authority to run locomotives they would not be liable for damages for doing so provided that no negligence or carelessness was proved. Thus the running of locomotives without statutory authority, or the running of a traction engine along a roadway, would come under the principle of the common law. This is in accordance with the almost unanimous decision of the English courts in similar cases, and is based on the argument that Parliament having authorized certain things to be done under certain restrictive conditions, it would be absurd to suppose that it was intended that the performance of such acts in compliance with the conditions imposed would render the company doing them liable for damage that might result.

With the object of placing railway companies in the same position as the individual in regard to liability for damage, the following amendment to the Railway Act has been passed by the House of Commons, and will probably become law, viz. :—

"Whenever damage is caused to any lands and fences, plantations or buildings and their contents, by fire started by a railway locomotive, the company making use of such locomotive shall be responsible for such damage and may be sued for the recovery of such damage in any court of competent jurisdiction."

Another amendment, which especially affects prairie lands, is to the effect that in the North West Territories railway companies must provide a fire guard of a ploughed strip eight feet in width, distant at least three hundred feet on each side from the centre line of the railway, and burn off the grass between the strips.

In connection with this provision the results shown by some recent experiments made with the object of obtaining definite information as to the distribution of sparks from locomotives are of interest. The experiments were made near Lafayette Station, on the Lake Erie and Western Railway, on a heavy grade. The wind varied from seven to twelve miles an hour, and the speed of the trains from 14½ miles, the lowest for freight trains, to 38 miles for passenger trains. The sparks were caught in pans spread out at right angles to the track, the bottoms being covered with cotton to hold the sparks and also to show to what extent they were still capable of causing combustion. The summary of the results showed that the greatest number of sparks fell at from 35 to 150 feet from the centre of the track, while the pans nearest the track, *i.e.*, from fifteen to twenty feet, caught but few sparks. Beyond 125 feet from the centre of the track the sparks were of such a character that there was no possibility of fires being started from them. No scorching of the cotton in the pans was observed in any case, but this may have been due to the fact that at the time the tests were made, April and May, the temperature was comparatively low, namely, 60 to 70 degrees Fahrenheit. Some of the larger sparks were, however, quite warm when picked up immediately after falling.



A String of Grey Trout.

Many Canadian lakes will yield such tribute to the experienced angler

A Fisherman's Camp.

This illustration shows an angler's headquarters on the incomparable Nepigon

Our Medicine Bag.

The annual general meeting of the Canadian Kennel Club was held on Wednesday afternoon, September 9th, in the exhibition room of the dog show building on the Toronto fair grounds. Mr. John G. Kent, the president, was in the chair, and there was a large attendance of members, who took a marked interest in the proceedings. Mr. H. B. Donovan, the secretary-treasurer, submitted his annual report, from which it appeared that the financial standing of the club was in good condition. The matter of affiliation with the American Kennel Club elicited a good deal of discussion, in which loyalty to the C.K.C. was the prevailing note, and it was ultimately decided that as far as the latter body was concerned the matter should drop except on the initiative of the A.K.C. The secretary's report also showed that during the year there had been 534 registrations, a considerable increase on the previous year. The total number now recorded in the stud book is 7,085. The membership for the year was 273, being an increase of 12 per cent. Some discussion arose over a suggestion to affiliate with the English Kennel Club. It was finally agreed to, and a committee consisting of Messrs. Kent, Donovan and Lindsay were entrusted with the matter with full power to act. The election of officers resulted as follows: Patron, Mr. Wm. Hendrie, Hamilton; President, Mr. John G. Kent, Toronto; Hon. President, Mr. R. Gibson, Delaware, Ont.; First Vice-President, Rev. Thos. Geoghegan. Hamilton; Vice-Presidents, Mr. H. Parker Thomas, Belleville; Mr. C. W. Minor, Victoria, B.C.; Mr. Geo. Caverhill, Montreal; Mr. O. J. Albee, Lawrence, Cal.; Mr. H. S. Rolston, Winnipeg; Mr. G. B. Borrodaile, Medicine Hat, Assa. (Above elected by acclamation), Secretary-Treasurer, Mr. H. B. Donovan, Toronto; Auditors, Mr. G. B. Sweetnam, Toronto; Mr. A. A. Macdonald, Toronto. Executive Committee: Mr. Jas. Lindsay, Montreal; Dr. Wesley Mills, Montreal; Dr. W. H. Drummond, Montreal; Mr. Geo. H. Gooderham, Toronto; Mr. W. P. Fraser, Toronto; Mr. A. A. Macdonald, Toronto; Mr. F. W. Jacobi, Toronto; Dr. C. Y. Ford, Kingston; Dr. A. A. Babcock, Brantford; Mr. J. Cromwell Cox, Ottawa; Rev. J. D. O'Gorman, Gananoque; Mr. T. A. Armstrong, Ottawa.

Baily's Magazine for September contains a paper upon the twelve best game shots of the British Isles. The Editor called upon well known sportsmen in each of the shires for their opinions. As a result of the ballot Earl de Grey stands an easy first. In succession follow Mr. R. Rimington Wilson, Lord Walsingham, Mr. H. Noble, Hon. H. Stoner, Lord Falconer, Prince Victor Duleep Singh, H.R.H. Prince of Wales, Mr. F. E. R. Fryer, E. de Oakley, Lord Ashburton and A. W. Blyth. In connection with this subject it is interesting to note that Baily's says: "It is not everyone who has described his own method of shooting, so far as he knows it himself; and it is quite proverbial that the best performers never seem quite to know how they do it; but nevertheless between what they have said, and what they have done, and the appearance of their performance to other people, the secret (if it be a secret) is disclosed. Briefly put, it is this: they can shoot in any form save one. They none of them shoot without aiming; they none of them appear to aim; they none of them put up the gun yards ahead of their game and fire with a still gun; they all of them swing the gun with the game to the point ahead they want to reach; and they none of them stop the gun when they pull the trigger." Lord Walsingham's best work has been done with a 12 bore cylinder—chokes are decidedly out of fashion in Great Britain—and ¼ drams of powder and 1⅛ oz. of No. 5 Derby shot. With this load and gun he killed 121 wood-pigeons on the wing, as they flew to their roosts in the beech woods at night, and any one who has

shot the wild pigeon of Europe under these conditions knows that this feat takes a lot of doing. Lord de Grey shoots with 1 1-16 oz. No. 5 English shot and 42 grains of Schultze all the year round. None of these gentlemen use a gun heavier than 7¼ lbs., while Mr. Fryer, who is an acknowledged crack shot, shoots a 12 bore, weighing 6¼ lbs.

One of the greatest boons ever granted hunters of big game, was the choice of a high velocity, low pressure cartridge to use in their black powder rifles. English cartridge manufacturers claim 10 per cent. less pressure and 10 per cent. higher velocity for their cordite loaded cartridges over the old black powder express charges, but the American factories seem to have done even better, for they have certainly gained more than 10 per cent. in velocity while but slightly increasing pressures.

The high velocity, *low pressure* cartridges put out by the Winchester people are .25-20, .32-20, .38-40, .44-40, .45-70, .45-90 and .50-110 Express.

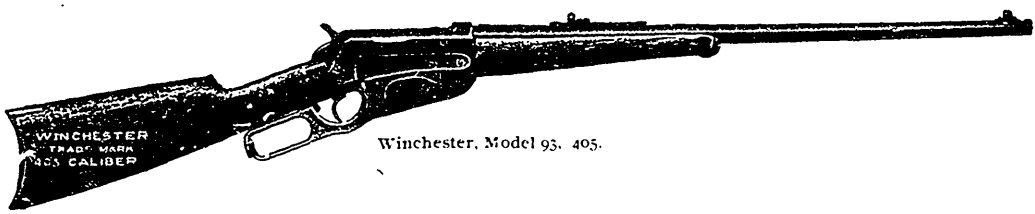
The advantages of the .25-20, .32, .38 and .44 model 1892 high velocity cartridges are increased velocity, flatter trajectory, greater striking power and better mushrooming of the bullets. The .45 and .50 caliber high velocity cartridges are desirable for the same reason, and also because their energies at 200 yards are practically the same as those of the small caliber high power cartridges. An additional advantage is that the results they give are obtained with bullets of large cross section, which make these cartridges unsurpassed in striking and killing power at the distances at which most big game is killed. A feature of all the high velocity cartridges is that they can be used by persons who dislike the high power small caliber cartridges on account of their great range.

These cartridges are loaded with smokeless powder, and soft point, metal patched bullets. Users of Winchesters of models 1886 and 1892, may increase greatly the power of their guns. Old rifles should have a slightly higher front sight affixed, or they will be found to shoot too high above the line of sight, but if new rifles are ordered, and these cartridges are to be used, the correct sights will, of course, be put on by the makers.

The fifteenth annual dog show in connection with the Toronto Industrial Exhibition, was held from the 7th to 10th September inclusive, and was beyond question the best, from any point of view, ever seen in Toronto. Not only was the entry the largest, but the exhibits were much ahead of the usual standard, the uniform excellence of most of the classes being the subject of general comment. In all classes of sporting dogs there was an unusually keen competition, and was a very gratifying feature of the exhibition. Foxhounds, greyhounds, pointers, English and Irish setters, and spaniels, were unusually strong in number, while the quality was exceptionally fine. Indeed, seldom, if ever, has such a uniform lot been seen at any show, and this department must have delighted followers of the gun. As usual in Toronto, the display of fox-terriers, both smooth and wire-haired, was one of the features of the show, and while judging was going on the ring was surrounded with interested spectators. Another event which created great interest was the judging of the collies. Two recent importations, Balmoral Baron and Balmoral Beatrice (formerly Old Hall Beatrice), two handsome tri-colors, and both extensive winners in England, were greatly admired. They are owned by the Balmoral Kennels, Ottawa, and are certainly an acquisition to their already fine lot of stud dogs and brood bitches. There were quite a large number of American dogs shown, a fact which must be peculiarly satisfying to the Committee, seeing the attitude which the American Kennel Club has taken towards the C.K.C., and the efforts that were made to induce them to hold the show under the former's rules.

A new and very powerful box-magazine repeating rifle cartridge has just been placed on the market by the Winchester Repeating Arms Company. The des-

cription given by the manufacturers is as follows: "Model 1895, caliber .405." Rifles for this cartridge are made with 24-inch round, nickel steel barrels, and weigh about 8¼ pounds. The Winchester .405 caliber cartridge is the most powerful shooting cartridge, at both long and short ranges, ever adapted to a magazine rifle. Its high velocity and heavy bullet give flat trajectory and great striking power, making it desirable for hunting the largest game. Its striking energy at 150 yards is greater than the muzzle energy of the .30 U. S. Army cartridge. The .405 caliber cartridge is loaded with a 300-grain soft point metal patched bullet and special smokeless powder, which gives the bullet a muzzle velocity of 2,204 foot seconds, generating a muzzle energy of 3,235 foot pounds. Its penetration with soft point



Winchester, Model 93, 405.

.405 Winchester Cartridge.

bullet at 15 feet from the muzzle is thirteen ⅞-inch pine boards. Send for illustrated circular of this new gun and cartridge.

There is just one animal on this continent that needs such strong medicine—*bruin*. But as Winchesters are as much used in India and Africa as in Canada, we will venture to predict a great demand for the .405 in those lands of savage carnivoræ and huge pachyderms. No leopard, lion or tiger could do much damage after receiving a shot in the vitals from this rifle.

Although written for British sportsmen, Mr. Rowland Ward's handbook on practical collecting will be found of considerable value to Canadian and American sportsmen. The eighth edition has now been published, a tolerably dependable index of the permanent value of the work. The author does not confine his remarks to taxidermy and the preservation of trophies, but has a good deal to say upon weapons and charges. He quotes a letter from Selous, the great African hunter, from which we take the following passage: "It is difficult to say which is the best form of small bore rifle, as the Mannlicher, the Mauser, and the Lee-Metford each have their advocates, and good work has been accomplished with all of them. Success depends very much on the form of bullet used, and young sportsmen should be very careful on this point. Personally, I have used a .303 bore rifle with most satisfactory results against such animals as sable and roan antelopes, and Koodoo bulls in South Africa, and wapiti bulls and mule deer in North America, and I have every faith that such a rifle would be as effective against a lion as the best form of .450 bore express rifle, with which latter weapon I have killed several lions. Indeed, I look upon the .303 bore rifle, with the best form of expanding bullet, as somewhat superior in killing power to a .450 express rifle, over which, moreover, its much lower trajectory gives it a very great advantage." The book may be had of the author, at 166 Piccadilly, London

The Editor ROD AND GUN IN CANADA.

Sir:—In your August number you made reference to a suggested resolution forwarded by Col. Falk Warren, but received too late for the annual meeting of the Forestry Association.

Taking great interest in game preservation, the idea embodied in the resolution suggested itself to me some time since, with the result that in February last I wrote Sir Henri Joly de Lotbiniere, the Vice-President of the Association, and also consulted with Col. Falk Warren, who very kindly took the matter up and forwarded the proposed resolution. It was a matter of great regret that same was too late for the annual meeting, but I think you will agree that it is of sufficient importance to receive the serious consideration of all interested in the preservation of Forestry and Game. Granted, as you say, the matter is one of "paramount interest," you will therefore agree that it cannot be taken up too soon.

Cannot a special meeting of the Association be called to consider the matter, and authorize the Executive to take some immediate steps to see that provision is made in all transcontinental railway bills for land grants so that same are subservient to the location of Forestry Reserves in any province or territory.

Yours truly,

F. M. CHALDECOTT.

Vancouver Club,
Vancouver, B.C.

The Chinese or "Mongolian" pheasant (*Phasianus torquatus*) has been introduced most successfully into British Columbia, and from what Mr. W. B. Tegetmeier, the great English authority, writes in the latest—the third—edition of "Pheasants," it should do very well in the great woodlands of southwestern Ontario, between Toronto and Detroit, especially in that favored strip where the rigors of winter are mitigated by the proximity of Lake Erie. Of this bird the author states: "The specific name *torquatus* is derived from torquis, a chain or collar worn around the neck. This species was introduced into England a great many years since, long before the time of Latham, who described it as having been turned out in preserves on many estates. No bird could be better adapted for our coverts; being natives of a cold part of China they are very hardy—a character which they display by laying early in the season, and by producing an abundant supply of eggs." A very great deal of interest is being taken in the pheasant family just now, especially by American sportsmen, and to all such Mr. Tegetmeier's work may be commended; it is by long odds the most trustworthy of the numerous treatises on the natural history and practical management of the pheasant. Horace Cox, Ream's Buildings, London, is the name and address of the publisher.

Mrs. Alice M Hayes is well known to all English speaking readers as a delightful writer upon the art of horsemanship, and it is not surprising that a second edition of her work "The Horsewoman," has been called for. Captain Hayes has written a series of most useful books dealing with the horse in a very thorough way—the only branch left untouched by him being capitally handled by Mrs. Hayes. To write such a book successfully a woman must herself be a superb rider, and have had a wide and varied experience. This the authoress has had, undeniably, and hence what she writes may be accepted as authoritative. For seven years she acted as rough rider at her husband's horse-breaking classes in India, Ceylon, Egypt, China and South Africa, and latterly she taught many pupils to go straight and to fly the formidable fences of the English shires.

The treatment of the subject is thorough. The horse to pick, the saddle, bridle and dress, are discussed; then mounting, the rein-holds and the seat come in for careful consideration, and, finally, riding in all its phases, from the school to the burst across a stiff country, is gone into at length. The book, which is published by Hurot & Blackett, 13 Great Marlborough St., is well illustrated by half-tone cuts, made from photographs.

The Ottawa Kennel Club held its annual show under C. K. C. rules, commencing September 15th, and continuing for three days. There was a very good entry from various points in Canada and a few from the United States, and, on the whole, the Committee may be con-

gratulated on the success achieved. Being held in conjunction with the Central Canada Exhibition, the show attracted a very large number of visitors, who were well pleased with what they saw in canine aristocracy. Messrs. F. F. Dole, of New Haven, Conn., and Dr. C. Y. Ford, of Kingston, Ont., were the judges, the former taking the major portion of the classes. Both are experienced men, and gave general satisfaction. Sporting dogs were quite an interesting feature, and it is very encouraging to note the evident favor in which this class of canine is now held. Collies were a very good class, the most conspicuous in merit being the Balmoral Kennels display. This enterprising firm captured premier honors in both sexes with Balmoral Baron and Balmoral Beatrice, recent additions to their kennels from the Old Country. Fox Terriers were also a fine exhibit, and two Montreal exhibitors carried off first honors in wires. These were Mr. R. C. Binning's Stovepipe and Mr. Alec Smith's Sawdust. The former is a compact dog of about nine months old, with a fine head and ears, about the right size, good jacket, and teeming with terrier quality. If Stovepipe maintains his present rate of progress until maturity he is likely to be heard of in better company. His winnings were, 1st puppy, novice, limit, open, winners, and special for best wire-haired terrier in show. He was got by Financier *ex* Anna Held, and was bred by Alec Smith. Several other breeds were worthy of extended notice, but space will not permit.

A region that is attracting a good deal of attention at present is that drained by the Mississaga, discharging into Georgian Bay. That part of Ontario is very little known and undoubtedly contains a good head of big game, and no doubt timber and minerals. We know but little of it as yet, but, so far as our information goes, there are many deer and black bear in the valley of the Mississaga, some moose and caribou, and unusually good pike and grey trout fishing. Ruffed grouse and duck are reported to be present in quantities sufficient to satisfy the needs of many hunting parties. The region is best reached by way of Biscotasing.

The Manitoba Field Trials took place last month, and were well contested. In the Derby the winners were as follows: Uncle Sam, 1st; Shawnee, 2nd; Chippewa, 3rd. In the All Age stake the winners were: Portia, 1st; Prince Rodney, 2nd; Tony Man, 3rd. The Champion stake was won by Mohawk. The judges were Messrs. W. W. Titus and W. F. Ellis in the Derby. Mr. Bevan assisted Mr. Titus in the All Age and Champion.

Two volumes that the enquiring man having a taste for natural history and for forest wandering should certainly own are Parts I. and II. of the Catalogue of Canadian Birds, by John Macoun, M.A., F.R.S.C., the talented and indefatigable naturalist to the Geological Survey of Canada. The first volume appeared in 1900, but the second has only made its appearance recently. A third and completing volume is promised shortly.

The Government of the Province of New Brunswick has given notice at a meeting of lumbermen held recently that they intend to increase the stumpage rate to $1.50 a thousand. Owing to the prosperous state of the lumber industry, it is considered by the Government that they are in a position to pay the increased rate of 50c, while the demands on the expenditure of the Province will require an increased revenue.

CONTENTS

October, 1903

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.

The Official Organ of the Canadian Forestry Association.

ROD AND GUN IN CANADA does not assume any responsibility for, or necessarily endorse, any views expressed by contributors to its columns. All communications should be addressed to:

ROD AND GUN PUBLISHING CO., 603 Craig Street, Montreal.

Price, 10 cents a Number. $1.00 a year.

Branch Office—36 Confederation Life Building, Toronto.

Premium Department

Are you not acquainted with many sportsmen interested in Canadian fishing and hunting, who would gladly subscribe to **Rod and Gun in Canada** if it were brought to their attention? Subscribers for **Rod and Gun** can be secured with very little effort. We offer you some useful and valuable premiums as a reward for your trouble. All articles offered are exactly as represented. The subscription price to **Rod and Gun in Canada** is only $1.00 per annum, payable in advance. Send your list of subscribers, with money order, to

SUBSCRIPTION DEPARTMENT,
ROD AND GUN IN CANADA,
603 CRAIG STREET, MONTREAL,

mentioning premium or premiums you select, and they will be sent at once.

Premium Offer No. 1

If you send us one new subscriber we will send you your choice of the following articles:—A Perfect Gun Cleaner, valued at 50 cents; a Little Giant Rifle Cleaner, valued at 50 cents; a Hook Shield, valued at 50 cents; a Lightning Fish Scaler, valued at 50 cents.

Premium Offer No. 2

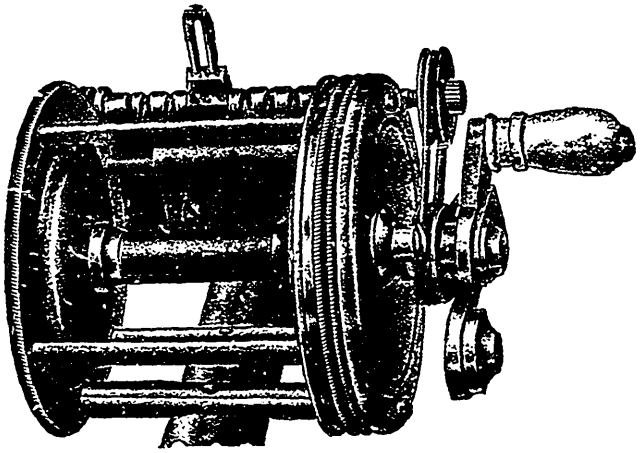
If you send us two new subscribers we will send you your choice of a Bradley Shot Gun Sight, valued at ninety cents; or a Pioneer Gun Cleaner, valued at ninety cents.

Premium Offer No. 3

If you send us three new subscribers we will send you a New Savage Hunting and Target Sight, valued at $2.00.

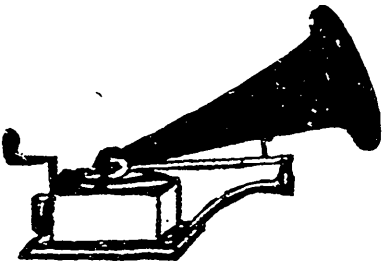
Premium Department

Premium Offer No. 4



A splendid Jewelled Bearing 60 yard Patent Independent Level Winding Device, valued at six dollars, strong cut gear, light running, durable will be sent for eight new subscribers to Rod and Gun in Canada.

Premium Offer No. 5



An opportunity to secure a famous Berliner Gramophone, the original flat-disc talking machine. It renders music of every description. It tells stories, every word clear and distinct.

Gramophone Offer No. 1.—To anyone sending us twenty-five new subscribers we will send a Berliner Gramophone, with three records, type "A," with Brass Horn, valued at $17.00.

Gramophone Offer No. 2.—To anyone sending us thirty new subscribers we will send a Berliner Gramophone, with three records, type "E," valued at $22.00.

Gramophone Offer No. 3.—To anyone sending us forty new subscribers we will send a Berliner Gramophone, with three records, type "B," valued at $28.00.

Premium Offer No. 6

To anyone sending us sixty new subscribers we will send a King Folding Canvas Boat, valued at $40.00. This boat can be carried in a buggy, and will last a lifetime.

Canadian Forestry Association

Patron :
HIS EXCELLENCY THE GOVERNOR-GENERAL.

Honorary President :
WILLIAM LITTLE, ESQ., Westmount, Montreal.

President :
HIRAM ROBINSON, ESQ., Ottawa, Ont.

Vice-President :
AUBREY WHITE, ESQ., Assistant Commissioner of Crown Lands, Toronto, Ont.

Provincial Vice-Presidents :

ONTARIO.—J. B. MCWILLIAMS, ESQ., Peterborough.
QUEBEC.—HON. S. N. PARENT, Quebec.
NEW BRUNSWICK.—HIS HONOUR J. B. SNOWBALL, Lieut.-Governor.
NOVA SCOTIA.—A. H. MCKAY, ESQ., LL.D., Supt. of Education, Halifax.
PRINCE EDWARD ISLAND.—REV. A. E. BURKE, Alberton.
MANITOBA.—MAJOR STEWART MULVEY, Winnipeg.
ASSINIBOIA.—J. S. DENNIS, ESQ., Calgary.
ALBERTA.—WILLIAM PEARCE, ESQ., Calgary.
ATHABASKA.—F. D. WILSON, ESQ., Fort Vermilion.
BRITISH COLUMBIA.—H. BOSTOCK, ESQ., Monte Creek.
YUKON.—THE COMMISSIONER, Dawson.
KEEWATIN.—THE LIEUT.-GOVERNOR OF MANITOBA.

Board of Directors :

WM. SAUNDERS, ESQ., LL.D., Ottawa, Ont.
PROF. JOHN MACOUN, Ottawa, Ont.
THOS. SOUTHWORTH, ESQ., Toronto, Ont.
J. R. BOOTH, ESQ., Ottawa, Ont.
C. JACKSON BOOTH, ESQ., Ottawa, Ont.
JOHN BERTRAM, ESQ., Toronto, Ont.
E. G. JOLY DE LOTBINIÈRE, ESQ., Quebec, P.Q.

Secretary :
E. STEWART, ESQ., Ottawa, Ont.

Assistant Secretary and Treasurer :
R. H. CAMPBELL, ESQ., Ottawa, Ont.

THE objects of the **CANADIAN FORESTRY ASSOCIATION** are :

The preservation of the forests for their influence on climate, fertility and water supply ; the exploration of the public domain and the reservation for timber production of lands unsuited for agriculture ; the promotion of judicious methods in dealing with forests and woodlands ; re-afforestation where advisable ; tree planting on the plains and on streets and highways ; the collection and dissemination of information bearing on the forestry problem in general.

ROD AND GUN is the official organ of the Association, which supplies the articles relating to Forestry published therein.

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.

The annual fee is $1.00, and the Life Membership fee $10.00.

Applications for membership should be addressed to the Treasurer,

R. H. CAMPBELL,
Department of the Interior.

OTTAWA, ONT.

THE HERALD PRESS, MONTREAL