

Single Copies, 10c.

DECEMBER, 1902

\$1.00 a year

ROD AND GUN IN CANADA



Nipissing's Surges

A MAGAZINE
OF CANADIAN SPORT
AND EXPLORATION



HUDSONS BAY COMPANY



The Hudson's Bay Company

Has had over 229 years experience in providing for hunters



Everything necessary can be supplied. Circular Letters of Credit issued on all the Company's Inland Posts. Further particulars on application to

HUDSON'S BAY COMPANY
WINNIPEG

Hamilton Powder Company

HAS MANUFACTURED **SPORTING GUN POWDER**



Since 1866, as a result you have

"CARIBOU" made from best materials, perfectly put together. "DUCKING" hard pressed, slow burning, keeps well under all conditions. "SNAP SHOT" high velocity, moist residium cheap. The powder for every day use.

ENGLISHMEN SAY

Powder can be bought in Canada as good as ever put in a gun. It has a positive advantage over home make, the dirt is soft.—J. J. W. in London Field.

AMERICANS SAY

The finer English or American Powder and Canadian "Caribou," I am quite familiar with. They give so little recoil that one may shoot all day without bruised shoulder or headache—Forest and Stream.

CANADIANS ABROAD SAY

Can you send over some Trap? I don't mean to flatter but it is ahead of anything we get here.—A. W. W., Batavia, N. Y.



WINCHESTER

REPEATING RIFLES

repeat. They don't jam, catch, or fail to extract. In a word, they are the only reliable repeaters. Winchester rifles are made in all desirable calibers, weights and styles; and are plain, partially or elaborately ornamented, suiting every purpose, every pocketbook, and every taste.

WINCHESTER AMMUNITION

made for all kinds of shooting in all kinds of guns.

FREE—Send name and address on a Postal for our 164-page Illustrated Catalog.

WINCHESTER REPEATING ARMS CO., NEW HAVEN, CONN.



ON THE TRAIL
A pack trail in Cassiar, B.C.

ROD AND GUN IN CANADA

VOL. IV.

MONTREAL, DECEMBER, 1902

No. 7

Hatching and Planting Trout.*

BY PROF. EDWARD E. PRINCE.

In the hatching of trout and salmon, whose ova are comparatively large and heavy, it is usual to place the eggs in shallow perforated trays over which pure fresh water passes during the period of incubation. If the eggs are loosely spread so that they do not unduly press upon each other, and if frost, excess of light, deleterious chemical or other influences are guarded against, the process of artificial hatching can be accomplished with facility. More than thirty years ago the Commissioner of Irish Fisheries hatched a quantity of salmon by a simple incubating apparatus in his office in the Customs House, Dublin—a clear proof that the obstacles to success are not serious.

Before commencing artificial fish-culture for the purpose of stocking any waters, it is necessary to prove as a first step that the waters are suitable. Even streams and lakes, which once abounded with trout, may, during the process of depletion, have become altered in character, and no longer possess their former favourable features. A few adult trout transplanted from other waters will in a single season afford the required information. If the fish survive and flourish, there need be no fear of success. Such information is especially necessary in the case of artificial ponds or of waters which it is proposed to stock for the first time. Under conditions which are really unfavourable speckled trout will, of course, live, but not in a healthy, vigorous state. They will even survive

in shallow stagnant water, where the supply is small and uncertain, but very different conditions are necessary for successful trout-culture.

If it is intended to hatch and rear trout from the egg, the parent fish must be secured before the close season begins and retained in a pond until ripe, otherwise trout can only be secured by obtaining from the Minister of Marine and Fisheries a special permit, the conditions attached to which are very stringent. Trout, when two years old, will yield spawn, but as the number of eggs yielded by them is small, and the eggs have been proved to be less hardy than those of older fish, it is preferable to select parent fish not younger than four years and not older than twelve years. Moreover, the larger fish furnish a greater number of eggs, the amount being about 900 for every pound weight of the parent, and the eggs themselves are of larger size. A salmon produces eggs at least one-third larger than those of a small grilse, and the fry hatched from eggs of large size have been found to be finer, healthier, and of more rapid growth than from smaller eggs. This is as true also of trout. The spawning season extends over a long period, and individuals containing ripe eggs may be found from late fall until spring. It is not necessary to describe the methods of obtaining parent trout, though the drag seine of 1-in. bar, *i. e.*, about 2-in. extension mesh, is very effective. The seine being an excessively destructive

* A Special Report to the Department of Marine and Fisheries.

net is generally discouraged in Canadian waters, however, and it must not be forgotten that the barring of small streams frequented by trout and other fish is forbidden by law.

The requisite number of parent trout having been obtained and confined in a small pond ready for artificial spawning, it is necessary for at least two operators to assist in the work, one to perform the "stripping," the other to net the fish, as required, and hand the vessels, etc., to the operator. Kneeling on the ground the operator firmly but gently lifts a fish by the tail out of the landing net, using his left hand and rests its head for a moment on a towel, lightly passing his right hand towards the throat and grasping it with the open thumb and forefinger under the breast fins, the other three fingers of the right hand being pressed upon the left gill-cover of the fish. The back of the fish is pressed against the right breast of the operator and the tail bent back and upward. If the fish is fully ripe, the ripe eggs will shoot out in a continuous stream and the assistant completes the operation by gently pressing upon the under side of the fish and passing his hand from the head towards the tail to expel the eggs that may not have run out. The eggs should not fall far, so that the assistant should hold or place on the left of the operator the shallow dish, which is to receive the eggs. No force is necessary. If the eggs refuse to stream out, the fish is most probably not fully ripe, and a little patience will prove that. Some fish refuse for a minute or two to yield their spawn, and old fish always spawn less freely than young examples. Some manipulators wrap the fish in a towel, leaving the snout and hind part of the body free, others hold the fish's head or shoulders in the left hand, and grasp the under side of the body with the right hand, holding the tail down and slightly pressing with the right thumb. There are disadvantages connected with these methods; but in all alike patience and gentle handling are essential. The fish should not be unduly disturbed or roughly treated, and spawning can thus be accomplished without the slightest possibility of injury. Very large and strong fish may demand the united

efforts of two operators. When four or five female fish have been spawned into the plate yielding, say, 10,000 ova, the assistant must then land in succession two or three ripe males. Each fish should be brought close to the eggs as they lie in the plate, and as soon as the abdomen touches the eggs a large flow of creamy milt will be forcibly ejected. The plate should be turned round as each new male is brought so that all the eggs may receive a share of the fluid milt. A slight pressure of the right thumb and finger behind the breast fins and further back will increase the flow. The milt of a single male will suffice for an extraordinary number of eggs if both sexes be in fully ripe condition, and in case of necessity one male may with confidence be used to fertilize the ova of five or six females; but where possible the first named proportion is safest. The vivifying or fertilization of the egg will be aided by gently stirring them with a clean feather after milting, and adding half a pint of water to dilute the creamy milt. Each dish when thus filled and stirred should be placed on one side and five more females spawned into another dish. In half an hour they should be transferred to a larger vessel, a clean wooden bucket, and placed under a gentle flow of clean water, to wash all impurities and excess of milt away. The eggs will appear no longer soft and yielding, and instead of clinging together will be hard to the touch and separate from each other. They are very elastic and will endure great pressure. Thus Frank Buckland, the most famous of English pisciculturists, placed upon some trout eggs a weight not less than 5 lbs. 6 ozs. before he could crush them. Nevertheless pressure especially upon newly fertilized eggs is highly injurious.

It is necessary to place the eggs, after being cleaned, upon the hatching trays. These consist of lightly made square frames of wood, across which is stretched japanned wire cloth, though in the Government hatcheries perforated tinned trays, black japanned, have been found advantageous.

The following five conditions are necessary for successful hatching:—

1. A supply of water which is regular and unfailling.

2. Water of even temperature, that supplied from a spring at some depth beneath the ground is preferable.

3. Freedom from impurities and sediment, which suffocate the eggs, hence the supply of water should run into a tank to allow sediment to settle before it runs over the hatching trays.

4. The quantity desirable is about 100 gallons per hour for 10,000 eggs. The greater the quantity of water the better, as eggs actually breathe water and need ample supplies of oxygen which the fresh inflow of water contains.

5. Protection from floods by means of guards and an overflow ditch higher up than the supply pipe. While spring water from its equable temperature, purity and other features is always preferable, yet when incubation has advanced to what is called the eyed-egg stage, water from a brook or river will serve quite well.

Trout eggs hatch out in from 50 to 150 days, according to the temperature, amount, and rapidity, as well as the character, of the water. Water from limestone strata is generally held to be best, and the greater the quantity of water the longer can incubation be protracted. Temperature is of course most potent, and a change of one degree Fahr. rise or fall, shortens or lengthens the process of incubation four or five days. Eggs of trout which hatch out in 50 days when the temperature of the water is kept at 50° Fahr., will take 100 days if the temperature is kept as low as 40°. The filled hatching trays are placed in wooden tanks open at the top, and a flow of water through the boxes must be arranged to ensure two inches or less of water over the eggs. Direct light should be excluded to discourage fungus growth. Dead eggs should be picked out each day. When eggs die they lose their delicate transparency and bloom, and assume a dead white appearance, and unless removed a feathery fungus rapidly covers the egg, and spreads to other healthy eggs. Hence the necessity for promptly removing them. If eggs require moving on the tray it should be done gently with a soft camel-hair pencil or brush. They may be softly swept into a spoon when it is desired to remove a few from the tray.

A tray may be emptied by lifting it out of the water and skilfully overturning it into a dish. Eggs must never be touched by the hand, and dead eggs are best removed with wooden pincers or forceps.

Hatching and rearing boxes require to be blackened inside. Charring is much to be preferred to black varnish. Black paint must be avoided. Hot blocks of iron 20 lbs. or 28 lbs. weight are closely applied to the surface to be charred and this close contact prevents burning. All boxes, trays, etc., after charring, varnishing, etc., must be well seasoned in water some time before hatching operations begin.

When the delicate young fry, called "alevins," begin to hatch, they do so in such numbers that special tanks are necessary to which to transfer them. Many of the fry cannot free themselves from the egg-shell or capsule, and require a little skilful help by means of an artist's camel-hair brush. When not more than two hours old the little fish have intelligence enough to dart away from danger. It requires some agility to capture one with a spoon. A scoop of fine gauze or perforated zinc is effective.

The following points may be noted in connection with managing the fry:—

1. They should be exposed to very little light.

2. No food is required until the large bag of yolk attached to each alevin is almost absorbed.

3. Prevent massing together, their jelly-like bodies when crowded together result in suffocation and death.

4. Cover the exit with fine gauze to prevent the tail and yolk sac of some of the fry passing through, and occasionally sweep them gently away from the point of overflow.

Before the yolk is gone, trout fry will pick up minute particles of food, and, indeed, if fry are kept more than six or seven weeks, systematic feeding must be resorted to. At the Restigouche hatchery, Mr. Alex. Mowat was granted permission in 1899 to retain and rear 10,000 sea salmon fry until they were six months old, when many of them reached three inches in length. This very successful attempt is referred to in the report by the officer named (See Depart-

ment's Report for that year, Appendix II, Fish-Culture Operations) from which I quote the following:—

As regards the 10,000 fry retained at the hatchery in open air tanks until six months old, the experiment was most successful. Many of these little fish were fully three inches in length when liberated in the autumn. The food for the fry consists of pulverized liver and raw fish, the fish only being used as a fluid food, and the liver grated into powder. A great amount of attention and care must attend the work of feeding the fry, and keeping all dead and decayed matter removed from the tanks. I am confident that from the trial made during the past summer at the Dec Side hatchery, that large numbers of the fry can be fed and reared in the tanks for at least six months before being liberated.

The utility of using other fish in a powdered or mashed state for the sustenance of advanced fry was suggested long ago by that pioneer in fish-culture, Dr. Theodatus Garlick, of Cleveland, Ohio, U.S.A.* Dr. Garlick, in his interesting little "Treatise on the Artificial Propagation of Certain Kinds of Fish" published in 1857, said (p. 89): It has been ascertained that the lean flesh of animals, when boiled, is an excellent article of food for young fish, or even old ones. As the fish are very small, it is necessary to hash it up into very fine particles, or they will swallow it; in fact, it should be pounded or grated very fine, but as they increase in size, it may be given in coarser particles. The flesh of other kinds of fishes, where they are plenty, would be an excellent substitute for the flesh of animals, either cooked or uncooked; I think this kind of food preferable to any other.

The question has often been discussed whether fry whose incubation has been protracted are stronger than those which have been hatched earlier under a higher temperature. Certainly the mortality in broods of English trout hatched in water below 40° F. is far less than when the water is of a higher temperature. The same has been found to be true of the Canadian speckled trout and the Rainbow trout.

In a series of ova which had reached an advanced stage in water of 48° F., and were then placed in trays supplied with water 10° lower, the hatching out did not take place until the 120th day, though they are known to hatch in 50 or 60 days under a higher temperature. The resulting fry are more robust, and fewer die during the early stages after liberation from the egg than in those hatched at a temperature of 48° to 60°. Actual tests on spawning beds have shown that for long periods the water may not rise above 35° or 35° until April, and the period of hatching is, therefore, prolonged to 150 or 160 days, with the result that the fry are stronger and more healthy.

In accordance with the conditions which obtain in nature, the fry, after exclusion from the egg, should not be subjected to very low temperatures, but water ranging from 45° to 55° is most suitable. The carrying of fry to the localities where they are to be deposited is an important matter. Railway journeys, if not too protracted, do little harm to fry, unless the cans or tanks holding them are kept too near a stove or hot pipes. Excessive heat often proves fatal in railway cars, but as a rule journeys by rail are less perilous than by team over rough roads, when the shocks and collisions seriously disarrange the delicate organization of the young fry and damage, it is believed, the sensitive otcysts of the little fish. Team-drives over rough trails through forests are not conducive to the well-being of fry, and when possible cans should be carried, in the manner described later, over very rocky or uneven tracts. Conveyance by boat or canoe is by far the best mode. Cans specially contrived for the purpose are best, and should be made of heavy galvanized iron† or stout iron well tinned, and holding 10 to 12 gallons of water. They may be 24 or 26 inches high, and say 18 inches in diameter, but may be of the form of a truncated cone, with a narrow neck in the centre for the purpose of preventing the splashing and loss of water as far as possible. Into the neck (say six inches in diameter), a cylindrical can fits, the bottom of which

* Vide my paper on "Fish Culture in Canada" *Transact. Ottawa Lit. and Sci. Soc.*, Part II., p. 164.

† While galvanized iron is the best material, it must be remembered that the spirits of salt, used in soldering is very hurtful, and new cans should stand full of water (often renewed) for eight or nine weeks.

is made of fine metal gauze. The gauze not only allows of aeration, but when necessary serves as a receptacle for pieces of ice which, melting, trickles into the water below, in which the fish are swimming about. The ice is often broken up into fine pieces or crushed, if it does not melt and cool the water properly. It should always be remembered that the young fishes, above all salmonoid fishes, cannot endure heat, nor are they able to withstand frost with impunity. Indeed, ice placed in the lid of the can or tank has proved harmful when on warm days the fry have been surrounded for some hours by water of 50° or 60°. Hence the advisability of transporting young fish either in the early spring months or during the night, and at early morning when the season is warmer and more advanced. At such times they can be most safely shipped.

It is well known that newly hatched fish are far less hardy than eggs. But even eggs during the first few weeks are very sensitive, and within three weeks after fertilization they should be subjected as little as possible to concussions and rough usage. Salmon eggs 22 days old died in eight or nine days after being roughly handled during some experiments by the late Dr. Francis Day, the well-known British salmon authority, but after the 47th day only very hurtful causes, such as chemical impurities, etc., will do them any harm, and "eyed" eggs are hardy in the extreme. No doubt vast numbers of ova are lost every year at the head waters of salmon rivers by being frozen. Certainly in 1881, this loss was very severe on many Scottish rivers. The famous physiologist, Dr. Davy, brother of Sir Humphrey Davy, imbedded salmon eggs in ice, and found that they survived; but his experiments provided conditions probably more gradual than the severe and trying circumstances of freezing near the source of a river.

In order to keep the cans suitably cool an outside jacket of iron is often provided, separated by an empty space from the inside can containing the fry. Such double cans are very effective, and being much cooler than ordinary cans, the fry are shipped in them with much greater safety and success. Whitefish fry, which

are very small and delicate, will to the number of 15,000 to 25,000, travel in one of these cans without loss if the journey be not long and trying; but half that quantity of brook trout and salmon would as a rule suffice. Some authorities favour the wise principle of putting a minimum quantity of fry in each can and regard 3,000 to 5,000 as ample, but with newly hatched fry before the gills are properly developed, and before they have acquired their full larval activity and vigour, a greater number can be safely shipped in each can. Ten cans is a full shipment for one team, and fewer cans are in most cases advisable. At the famous Howietoun fish ponds in Scotland, the lamented Sir James Gibson Maitland, whose recent death all interested in fish culture must deplore, used a conical form of can 24 inches in diameter across the bottom, and 4½ inches in diameter at the top. The height of the can is 32 inches, and the weight, when filled, about 170 pounds, so that two men could easily lift it about by means of two strong handles fixed at points a little above the centre of gravity (about 14 inches from the bottom). When it is necessary to convey the cans along forest paths or across rocky hills, two poles are horizontally attached to the handles, and the can is then easily carried—one man walking in front and the other behind. Many Scottish lakes situated on the highest altitudes have been successfully stocked by this method.

All fry should be planted immediately after arrival. If the hour of arrival at the planting ground be midnight or during the small hours of the morning so much the better, the atmosphere is then cool. In any case no time should be lost as every moment is of importance, and the sooner the fry are disporting themselves in the clear waters of the stream or creek, the greater is the assurance of success. Under no plea whatever should fry be kept in the cans over the night. Great risk is run by a few hours' delay. If through the impossibility of obtaining a team or other cause it is absolutely impracticable to at once plant them, they should be constantly watched and fresh water splashed in, or the water aerated by a bellows or other means. Aeration is most easily and effectively done by lift-

ing up water in a dipper from the can and letting it fall again with a splash; but on no account should the device be adopted of blowing down a tube into the can with a view to aerating the water. Such an absurd plan has been actually adopted by some manipulators; but in blowing down poisonous air from the lungs, the water in the can already vitiated with carbonic acid gas, becomes more vitiated and poisonous. The surest way of killing and asphyxiating fish suffering from lack of oxygen is to blow air from the mouth into their midst.

Again, fry should not be unduly knocked about or the cans roughly handled. "Fry will not stand much knocking about," wrote Sir Gibson Maitland . . . "the bottom of a tank (or can) used for transporting fry should be stiffened by cross pieces soldered underneath, as, if it sags at all, the fry soon get fatigued, possibly because the least spring from the bottom frightens them and they exhaust their strength by frequent and aimless sallies through the water." The same author also wrote: "With care fry can be carried for twenty-four hours, but the result is not satisfactory if the journey be longer."

Of course small quantities of fry can be sent further and more easily than large. The re-aeration of the water is a difficulty. It cannot be done automatically, as is the case with yearlings, because the motion the water acquires tires out the fry if very young. The cans should never be filled quite to the top; but a considerable space should be left or the fry will suffocate.

Bread crumbs or particles of such supposed food should never be scattered amongst young fish, when being shipped. Very bad results have followed when this has been done as bread is a most unnatural food for young fishes.

It usually suffices in a long journey to change the water at appropriate intervals. The fact is well known that little salmon and trout, only 2 or 3 weeks old, actively wave their pectoral fins to and fro and thus create a current of water which aids in oxygenation, and facilitates the breathing operations of the fish.

The actual planting of the fry is a most important matter, and a good deal

of very inappropriate advice has been published upon this matter.

It is clear that fry should not be suddenly transferred from a warm can to a can of water that is several degrees higher in temperature than the lake or stream.

The temperature should be somewhat equalized by mingling the two waters before the fish are emptied out. The temperature of the water into which the fry are to be transferred should not be more than 6° higher or lower than the water in which they have been carried from the hatchery.

It is hardly necessary to say that if fry are being sent some distance to be planted, it is an advantage to have all arrangements for their reception made beforehand, so that teams may be waiting the arrival of the cans and an immediate start be made. Before placing the cans on the team it is advisable to remove the ice from the covers of the cans unless the outside atmosphere be very warm. Cans of fish should never stand in the hot rays of the sun; but a cover or sheet should be so placed as to shield them. Cans should also be thoroughly rinsed and cooled with water before fry are placed in them. Fish frequently become sick before leaving the hatchery because this rule has not been observed and the fry placed in cans which have been warmed by the sun or nearness to a stove.

It is a good principle to find out where the fish naturally spawn in the waters to be planted, or if no fish of the same species occur, to ascertain where the best natural conditions exist. Thus whitefish should always be planted on clean gravelly ground in fairly shallow water, or where reefs of honeycomb rocks extend. Brook trout and salmon should be placed near the head of streams or as far up tributaries of large rivers as possible, avoiding, however, those which dry up during the summer.

Lake trout do best if distributed over rocky shoals such as are selected by the parent fish. In such places as those specified there is abundance of shelter, and the small fish, as a rule, make at once for niches in the rocks, or the protection of pebbles and stones. As pike, pickerel and other predacious fish are in

spring occupied in spawning, there is less danger from these fish than is commonly supposed, especially as the first-named species are then in weedy, marshy localities engaged in depositing their eggs. If sunfish, shiners, small suckers and pike appear to abound, it is best to select some other areas which are free from these destructive pests, or, if that is not possible, drive these fish away by disturbing the water, sweeping a net over the ground or some such method.

It is often the case that neither time nor circumstances will admit of reaching the best and most appropriate localities, and the planting must be done where it is apparent the young fry would not have been under natural conditions found. After much experience with young fry, I am bound to confess that planting fry upon what may not appear the most suitable grounds results in better success than might have been anticipated. The charge often made against officials of merely dumping in the fry at the most convenient rather than the most suitable places is less grave than might be imagined by the inexperienced. A man

standing on shore, with one foot encased in a fisherman's boot, in the water, can pour the fry gently into a deep part near the edge, and the fry will immediately seek shelter. A better plan is to gently empty the fry from a boat and the fry disperse before they reach the bottom. For a few minutes the mass of young fish appear to crowd together and then spread themselves and disappear from sight. That they survive and do well admits of no doubt, as the remark, already made, applies in this case, viz., that the chief enemies of the young fish are in swampy shallows engaged in depositing their spawn. In thus favoring the planting of fry in deep water when it is a matter of difficulty to plant them in small batches in shallow water, I have the support of the late Sir Gibson Maitland who wrote: "At first we used to place the fry in the shallowest water near the inlet of the ponds; but they were so frightened that they used to be huddled together in masses . . . when poured into deep water they instantly disperse, and in a few minutes have spread all over the pond in a lively and inquisitive spirit."



Wood as house fuel is certainly to be preferred to the soft coal abomination to which many were reduced. It is dusty and dirty in the handling, and the black smoke befouls the atmosphere and begrimes the houses and everything else with which it comes in contact. The dingy appearance of many American cities is largely due to this cause, and it is stated that the celebrated fogs of old London may date their origin from the beginning of the use of coal as a fuel. It is said that fogs began in London when the inhabitants were only 35,000 in number, the reason being the employment of coal instead of wood for fuel—at that time quite a new-fangled notion. In 1306, the King commanded that "fire-makers should cease their burn-

ing of sea coal and make their fires of such fuel as wood, as had been formerly used." It happened, however, that Mr. Richard Whittington, of revered memory, who turned again at the sound of the Bow Bells, formed, with others, the coal trust of that day and they made most of their money by shipping coal. "So," it is naively said, "the proclamation had no effect." Unofficial experiments show that in a week six tons of solid matter, consisting of soot and a variety of tarry hydrocarbons, highly injurious to animal and vegetable life, are deposited on a square mile in London and, after being purified to this extent, the fog is greeted by the country people upon whom it is carried down by the wind with the epithet of "London dirt."

Bruno the Hunter.*

BY WILLIAM HENRY DRUMMOND.

You never hear tell, Marie, ma femme,
Of Bruno de hunter man,
Wit' hees wil' dogs chasin' de moose an' deer,
Every day on de long, long year
Off on de hillside far an' near,
An' down on de beeg savane?

Not'ing can leev' on de woods, Marie,
W'en Bruno is on de track,
An' young caribou, an' leetle red doe
Wit' baby to come on de spring : dey know
De pity dey get w'en hees bugle blow
An' de black dogs answer back !

No bird on de branch can finish hees song,
De squirrel no longer play—
De leaf on de maple don't need to wait
Till fros' of October is at de gate
'Fore de blood drops come, an' de fox sleeps late
W'en Bruno is pass dat way !

So de devil ketch heem, of course, at las' —
Dat's w'at de ole folk say—
An' spik to heem : " Bruno, w'at for you kill
De moose an' caribou of de hill,
An' fill de woods wit' deir blood until
You could run a mill night an' day ?

" Mebbe you lak' to be moose youse'f,
An' see how de hunting go !
So I'll change your dogs into loup garou,*
An' wance on de year dey'll be chasin' you
Den res' of de tam w'en de sport is t'roo
You'll pass wit' me down below."

An' dis is de night of de year, Marie,
Bruno de hunter man,
Soon as de great beeg tonder cloud

Up on de mountain's roarin' loud,
Comes from hees grave w'ere de pine tree crowd
De shore of de leetle lake.

You see de lightning zig, zig, Marie,
Spittin' lak' loup cervier†
Ketch on de trap ? O ! it won't be long
Till mebbe you lissen anoder song !
For de sky is dark an' de win' is strong,
An' de chase isn't far away.

W'y shiver so moche, Marie, ma femme,
For de log is burnin' bright ?
Ah ! dere she's goin' ! Hulloo ! Hulloo !
An' O ! how de tonder is roarin' too !
But it can't drown de cry of de loup garou
On Bruno de hunter's night !

Over de mountain an' t'roo de swamp,
Don't matter how far or near,
Every place hees moccasin know
Bruno de hunter he's got to go,
'Fore de grave on de leetle lake below
Close up for anoder year.

But dey say de ole feller watch all night,
So you needn't be scare, Marie,
For he'll never stir from de rocky cave
W'ere door only open beneat' de wave,
Till Bruno come back to hees lonely grave
An' de devil he turn de key.

Dat's way for puuish de hunter man
W'en murder is on hees min',
So he better stop w'ile de work is new,
Or mebbe de devil will ketch heem 'oo,
An' chase heem aroun' wit' de loup garou
Gallopin' close belin' !

◆ Copyrighted by the Author.

* Were wolf.

† Lynx.



IN THE NORTHLAND.
Government explorers on the headwaters of Stikine River B.C.



ROCKS AND DOWNY TIMBER.

Every packer knows the delights of such a combination.—especially in the

Shadows 'Neath Bare Boughs.

BY HUBERT M'BEAN JOHNSTON.

Ask a photographer what are the essentials to success in winter landscape work and hear his answer. Most likely, he will run over half a dozen different factors: subject, light, perspective and what not. But there is one thing that he will not mention,—one thing that is of the utmost importance,—one thing that in a way plays a part of greater importance than any of those he mentions. He will forget all about the shadows.

By shadows, one does not necessarily mean shade. What is commonly referred to as shade is one thing; shadow is quite another, and between the two there lies a gulf as wide as the difference between black and white. When we speak of shade, we usually mean that part of the picture from which the sunlight is obscured by the leaves of a tree; by the shadow, we mean the blotches of darkness which the tree between the sun and the earth throws on the latter.

Now, it is in winter photography that these shadows are of the most importance. It is the shadows which lend to the snow-laden landscape all its delicate varieties of depths and drifts; it is that same shadow which marks out the side of every little hollow and throws into prominence every powder-covered reed and each small hillock that chances to lie a trifle higher than the rest. Were it not for the shadows, all would be one deadly, uninteresting mass of unspotted white, without possibilities in the way of composition, and monotonously nauseating to look upon. In winter photography, it is the shadows alone which make it worth while to attempt to centre the interest in the foreground by fluffing up the snow with one's feet before taking the picture. Without them, for in winter there is no atmospheric perspective to speak of, foreground, middle ground and distance would be all the same, all equal, all one black blotch on our negative without pictorial value.

Suppose we look first, in detail, at how it is possible to improve upon the foreground by means of shadows. A failure often teaches more than a masterpiece. Let us take a photograph with the source of illumination directly at our back. It is barely possible to distinguish the slender reeds and rushes that spring up here and there through the snow like so many miniature trees. They are almost lost. Then go at it a different way. Photograph them so that the sun is at the side and so that they will cast long shadows across the picture. The lower the sun is, the better the result will be. This makes an improvement. But now try it another way. Do not have the sun directly at your side nor directly in front, but, as it were, betwixt and between. This gives you a shadow that is four times as noticeable as any other kind and, consequently, a great deal more valuable in the creating of foreground effects. Or perhaps you have still heavier shadows in the foreground,—possibly a fallen tree or an immense boulder crops up through the snow and casts a dark patch to one side. It can be made use of to distinguish the foreground from the distance, even without any other assistance in the way of relative sizes of objects. The mere contrasting of that shadow with other shadows farther back in the picture, will serve to at once establish a perspective of its own which is at once both simple and effective. I want all who have copies of the last American Annual to turn to a picture by J. H. Field, of Berlin, Wis., entitled "Winter." The artist (for in this particular line of work, Mr. Field is undoubtedly an artist) shows in his foreground nothing but a country road such as one might expect to find running from a barn to the fields. And yet it makes a magnificent foreground. Farther back his middle distance and distance assume their proper places and relative values without any suspicion of

question, and at once the whole picture conveys to one a sense of winter and desolation, that far too often in such cases is expressed only in the title.

In winter photographs, one of the most difficult effects to attain is that of breadth. The trees are all stripped bare and there are no masses of light and shade to marshal into line. Even the waving hillsides are monotonously bleak and white. Again is it necessary to fall back on the shadows. Let them run either way you like, straight across the picture or from the tree trunk down to your feet. If you have the proper knack, you can do this successfully. Supposed you want them to run across, you must have them well toward the middle distance so that the whole tree shows. This will get you what you want. One or two trees in the immediate foreground, on the contrary, so that only their trunks show, are what is necessary if it is intended that the shadows shall run out toward the edge of the plate. This latter method is, however, only capable of treatment in the hands of an extremely careful person, for to accomplish successfully the sun must be directly in front, and one not only has to watch for halation from the sun itself, as in summer work, but there is also the reflection from the snow to contend against.

To get the effect of depth the operation is in a measure reversed. Cross shadows will give it, provided there are a few in the immediate foreground, none in the middle distance, and a few more in the extreme distance. The contrast between the two, and the fact that some are wider than others, together with the fact that the width of the spaces between them decreases as they go farther away from the eye, tends to produce the effect aimed at. Or again, a long shadow running from the base of a tree in the middle distance down to the lower edge of the photograph, will seldom fail to produce

a vista-like effect that will successfully carry out the impression. Another extremely simple and at the same time extremely effective method of getting an appearance of depth for a photograph in winter work, is to stand in the middle or slightly to one side of a road where passing sleighs have worn deep tracks in the snow. Then with the sun to one side of the path and low in the heavens no difficulty ought to be experienced.

One of the most difficult kinds of work that I am familiar with, (difficult either in summer or winter), is to stand in the middle of the roadway directly in front of a hillside and secure a picture of it that will successfully depict the gradual rise ahead. True, there is little difficulty in showing a high horizon line. The difficulty lies in showing that the distance between that line and the lens is a gradual ascent instead of a straight wall, as usually appears. Of course, a fence running up at one side will help. But suppose there are no fences? Well, now, I'll tell you. If you are able to so arrange it that a few shadows of trees will fall diagonally across the picture, there will be no trouble in showing the ascent. But should you find yourself unable to do this, all that is necessary is to walk up to the top, going from one side to the other and back again, taking care to kick up the snow well with each step. Then photograph it when the sun strikes it at the angle which makes the heaviest shadows.

Just a word in conclusion. Shadows may seem to you to be unimportant, and yet, after all, they are the very essence of winter photography. The amateur who is ambitious to score in pictorial work in the colder months, will find it impossible to do better than to pay a close attention to the way the light falls on different familiar objects and spots when the sun lies in varying parts of the heavens.



Camping in Canada.

BY DAVID T. ABERCROMBIE.

Locality is the first point to be considered. These suggestions are relative to the most popular form of trip, one through wooded and watered country, by canoe and portage. Maps of such localities and information are furnished by the passenger agents of the railroad and steamship companies, including descriptions of places, list of guides and best points of departure.

On a canoe trip, guides are a necessity, at least one with his canoe for each person; everywhere one man and his outfit is considered a sufficient care for one guide, and there are cases where a man needs two guides; an extra one as cook will add much to the comfort, for having a cook will prevent taking time for the routine work of camp. The wages of guides vary from \$1.00 to \$3.00 per day, according to the country and what it is customary for the guides to furnish; in some cases services, canoe and outfit. Canoes can be hired for from 25 cts. to 50 cts. per day, depending on the time of hire. Each canoe should be supplied with two paddles and, where necessary, a setting pole. Should a canoe be hired the choice of style should be left to the guide.

Those new to camping often leave their outfitting to be attended to by the guides, with a resulting discomfort due to the guides' different view point. Experienced campers make sure of their needs being supplied by owning their own equipment, collected and made ready at home, not left to be hurried over at the point of departure; even provisions had best be bought in the accustomed market. All can readily be carried within the 150 lb. baggage limit granted on a first-class ticket.

No matter where you go, wool is the best material for clothing; it keeps drier, is softer and makes less noise in the bush than either cotton or linen, and consequently makes the best hunting garment. Several thin layers of clothing or blankets is very much warmer than one layer of the same weight. If a

person objects to the feeling of wool, let the layer next to the skin be of some other material. Do not take clothes so old and worn out that one is continually patching and sewing ripped seams. Following is a list of necessaries, including clothing and articles worn from point of departure:

Three suits thin woollen underwear; 4 pairs heavy woollen socks; 1 grey or blue flannel shirt; 1 Pontiac heavy shirt; 1 large loose coat; 4 handkerchiefs; 1 neckkerchief; 1 felt hat, wide brim; 1 pair trousers; 1 towel; 1 pair Scotch knit wool gloves; 1 hair brush; 1 tooth brush; 1 comb; 1 cake soap; 1 pair lumberman's rubbers with leather tops; 1 pair low oiled moccasins; 1 match safe, waterproof, that floats; 1 belt; 1 sheath knife; 1 watch; 1 compass (pocket); 1 2½ lb. belt axe; 1 poncho; 1 package toilet paper; 1 pack strap; 1 head net; 1 Johnson sleeping bag made of 4 blankets 6 x 7 ft., weighing 10 pounds, folded and laced together at foot and one side, and covered with a waterproof cover; 1 Vaeger hunting cap which is used as a night cap; 1 suit all wool pajamas; 1 hot water bottle, 4 quart, this filled with hot water and placed in sleeping bag on a cold night is better than 5 pounds of extra blankets; 1 piece cotton line, 12 feet long; rifle, ammunition, fishing rod; tackle, camera, tobacco, etc., according to the person's taste and the season of the year; 1 pneumatic air mattress, weighing 9 pounds, makes an ideal bed and saves a great deal of time gathering boughs.

One 7¼ x 9¼ Abercrombie waterproof wall tent with sod cloth—16 lbs.; 1 7¼ fly projecting in front of tent to dine under, 4 lbs.; 1 7¼ x 7¼ pyramid tent for guides, weighing 8 pounds; 1 pot stove for heating wall tent (with telescope pipe); 1 Abercrombie nested cooking and eating outfit of aluminum as follows:

One cooking pot, 9 x 10 inches, holding 12 quarts, with cover and bail handle;

1 cooking pot, 8 x 8 inches, holding 7 quarts, with cover and bail handle; 1 cooking pot, 6 x 6½ inches, holding 3 quarts, with cover and bail handle; 1 coffee pot, 5 x 6 inches, holding 2 quarts, with cover and bail handle; 6 each cups, bowls, plates, knives, forks, teaspoons and dessert spoons; 2 shallow serving pans with folding handles; 1 dish pan, 10 x 4 inches; 1 large and 1 small fry pan with detachable handles; 4 sprinkling boxes for pepper, salt, spice and mustard; 4 dish towels, and 2 cloth pot holders; 2 canvas water pails; 2 canvas wash basins: 1 cake soap; 1 cylindrical fiber case, 12 x 14 inches, to contain the pot stove, cooking and eating outfit, sprinkling boxes, towels, pails, basins and soap, some pieces of cheese cloth for pudding cloth, bean pot, etc., this outfit may be bought and weighs 24 pounds; 1 18-inch aluminum folding reflecting baker or oven in canvas bag containing 1 bread board, 1 wire broiler, 1 large cooking spoon, 1 cake turner, 1 dish mop; (this package is 19 x 1 x 14 inches, and weighs 8 pounds).

Two small spools of assorted brass wire; 1 box of assorted nails, ¼ pound; 1 oil stone, small; 1 flat file, and piece of emery cloth; 1 pair pincers, medium; 1 awl handle and set of awls; 1 stick of cement for mending fishing rods, etc.; 1 pair scissors, needles, buttons, safety pins; 1 piece of bees wax; 1 spool of linen thread; 1 B.G.I. cleaning rod of brass, for rifles; 1 vial of gun grease; 1 roll of heavy twine, about 30 feet. Roll these small articles in an old piece of cloth suitable for gun cleaning and carry in a little canvas bag. This package weighs about 2 pounds.

Two folding lanterns, aluminum, weighing 4 ounces each; 36 candles, weighing 3 pounds; 1 rolling table top, weighing 3 pounds; 1 set of folding shelves, weighing 2 pounds; 1 brass tube of matches, weighing 1 pound; 1 wall pocket, weighing 1 pound; 2 pack straps, weighing 5 pounds; 1 pack of cards, set of chess men, dominoes, checkers or dice and box will provide amusement; note book and pencil should be carried; paper, stamps and envelopes may be useful.

Food list for four persons, two weeks:

	lbs.		lbs.
Flour	- -	24 Oatmeal	- - 2
Corn meal	- -	10 Rice	- - 6
Beans	- -	6 Julienne	- - 1
Erbswurst	- -	½ Soup tables	- ½
Bouillon capsules	- -	1 Evaporated apples	2
Lentils	- -	2 Evaporated apricots	2
Sugar	- -	9 Salt	- - 1
Royal Baking Powder	1	Whitman's chocolate	1
Coffee	- -	2 Tea	- - 1
Butter	- -	6 Bacon	- - 3
Pork	- -	10 Dried potatoes	- 4
Shredded cod fish	1	Shelled nuts	- 1
Peerless Evaporated	- -	Dried eggs	- 1
Cream	- -	7 Dried onions	- ¼
Pepper, spice, mustard—shaker full.			
Total, 106 lbs.			

One sees from the small quantity of meat on the list that game and fish will be supplied from the woods and waters, but this list is made out for two weeks even without that addition.

By actual experiment with this list on various trips the maximum consumption of food per head per day was 1.88 pounds, the minimum was 1.23 pounds.

One might be criticized carrying seven pounds in the shape of rolling table, folding shelves and wall pocket, but the outfit as described will not be burdened with these articles, and the comfort derived from using them is well worth their little weight.

A table top to eat from, shelves to hold the food, a wall pocket to hold clothes and little things need to be used only once to be considered an absolute necessity.

A fibre telescope 18 x 24 x 12 inches, with straps and handles, makes the lightest and most convenient packing case. The different articles of food are put up in cylindrical waterproof bags 8½ inches in diameter, and of varying heights, with the exception of butter, which is packed in a cylindrical tin-lined copper can of same diameter, and pork, bacon, chocolate and coffee, which are packed in pantasote leather bags of the same shape. Each package is marked with name of contents.

The seven cans of Peerless cream are dropped into the telescopic stove pipe.

Pork and bacon should be sliced for convenience in packing and use and the waste of cover, rind, etc., removed so that the weight represents clear food.

These food packages are then packed one upon another into three cylindrical

waterproof canvas provision bags, nine inches in diameter, twenty-four inches high and are then ready for the packing case, the canoe or portage. On the outside of each is a tag showing contents.

Remove the cover from the blankets of the sleeping bag and fold each part 18 x 24 inches as well as the tents and other cloths.

Place a folded sleeping bag in the bottom of one of the cases, next one of the tents, then two of the provision bags, and in the hollow made by the bags pack the clothing of one individual, pack straps and small articles, then the pneumatic air mattress.

In another case place the other folded sleeping bag, on top of that, the remaining provision bag and beside it a roll made of the stove pipe, the rolling table, the folding shelves and the dining fly. Next put in the baker outfit, remaining pack straps and small articles, the other tent, the clothes belonging to the other individual and the pneumatic air mattress.

This makes two articles of baggage, the cooking outfit and stove in their cylindrical case make a third, all ready for the railroad. Leave out the pantasote ponchos for use in case of rain.

Spread out the cover for the sleeping bag, lay one set of blankets in the centre folded as flat as possible, 18 x 24 inches; on them place the pneumatic air mattress, then the $7\frac{1}{4} \times 9\frac{3}{4}$ inch tent, then the baker outfit, then the extra clothing of one individual and some small articles. Fold the cover tightly over the package thus made, fold down the ends, and turn them over and secure with the twelve foot rope. Fasten one pack strap on to this package. This pack will weigh about fifty pounds.

Spread out the other sleeping bag cover, and in the centre place the other set of blankets folded 18 x 24 inches, then the pneumatic air mattress, next the guide's tent, next the wall pocket, then the extra clothes of the other individual, and the remaining small articles. Fold the cover tightly over the package thus made, fold down the ends and turn them over and secure with the twelve foot rope; fasten another pack strap on to this package. It will weigh about fifty pounds. If the ponchos are

not in use fold and slip them under the straps.

Fasten a pack strap on to two of the provision bags; this will make a seventy pound pack. The remaining provision bag, the stove pipe packed with cream, the dining fly, the table top, folding shelves and guide's blankets, &c., fastened together with a pack strap will make another seventy pound package. This will leave the rifles, fishing rods, cameras, etc., to be carried by hand, and the cooking outfit as an extra load for the strongest packer. A hundred pound pack is considered a moderate load over a short portage. If the party expects to bring out any heads, scalps or hides, get a pack of coarse salt at the point of departure.

TAXIDERMY.

To skin an antlered head begin at a point on the back bone between the shoulders, cut through the skin up along the cervical vertebrae to a point on a line between the antlers, cut across this line and around the antlers keeping close to their base.

Then from the point of beginning cut down to and across the brisket, and up the other side. Carefully remove the skin from neck and head until the ear is reached, cut the cartilage close to the skull. Proceed to the eye and cut carefully from the bone, being sure that the whole eyelid, both outer and inner skin, and the sinus under the eye, is left adhering to the scalp.

Proceed to the nose and lips; open the mouth and cut around at the top of the gums, not injuring the lining of the lips, let the scalp hang down from the skull and carefully work around the lining of the nostril, cutting through as far back as possible from the opening, carefully work around the lips in the same way until the cut on the inside of the mouth is reached when the whole scalp will come away. Remove the skull by inserting the knife between the last cervical vertebrae and skull. Remove the surplus bits of cartilage and tissue from the scalp and rub the flesh side with coarse salt, leaving it well covered with salt. Fold and roll carefully and put in a cool place. Remove the brains from the skull by a stick through the opening made by detaching

the vertebrae, remove the flesh, fat and cartilage from the bone, being careful to preserve the lower maxillary which should be tied to the skull, wash both inside and out and place in the sun to dry.

After the scalp has lain over night, open and pour out the water, and salt again very thickly, spread and dry in the shade; under no circumstances hang up by the nose; watch carefully to protect from fly blows. Ship to the taxidermist as soon as possible.

Skinning a bird is a very delicate operation, and should not be undertaken by the inexperienced. A bird should be hung by the feet and will last a number of days in cold weather; it should be shipped to the taxidermist as soon as possible.

To skin a fish carefully ascertain measurements, and make a diagram for the taxidermist marked with the length and girth in at least four places, open on

the reverse side from the one to be exposed when mounted by making a slit through the skin from gills to tail. Separate the skin from the flesh, cutting about the fins so as to leave the muscle in which the bone is imbedded; cut through the back bone at the tail and at the head, leaving in the gills. Cover well with salt inside and out, and ship to the taxidermist as soon as possible.

The medicine kit should be provided with such universal remedies as brandy, some bandages, some absorbent cotton, some adhesive plaster, compound cathartic tablets, cholera mixture tablets, quinine, phenacetine, mustard and belladonna plasters. Each individual should consult his own peculiarities and take what remedies he is most likely to need. In case of a wound or cut, remember that cleaning with hot water and a pure soap is sufficient antiseptic treatment. In season carry fly ointment.

(To be continued)



Moose in Canada.

BY JOSEPH J. DE LONG.

Charlie and I had read of moose, looked at his picture, seen his mounted head, seen his imitation at the sportsmen's show, until, one day we were fortunate enough to dine in company with a friend, who told such glowing stories of a country he had shot over the previous fall and the ability of the guides and the abundance of the game, that we decided we could not stand it any longer and straightway engaged the same guides for October 1st; it was then early June. I read the papers and magazines and this man's poor experience with a 30-30 and that one's opinion that nothing was better adapted for moose than that same caliber. There were advocates of every other rifle made so I bought a small caliber carbine with ten rapid fire shots, thinking that what the bullets lacked in weight they made up in numbers. Then I read statements by guides that 45-90 was none too big, stories of how wounded moose would

travel for three days and how they were found dead at distances that made me heart sick to think of the travelling to be done, through brush and swamp in uncertainty, so I bought what I thought would preclude much travelling after a moose had been hit—a 50-110 Winchester express and took that, together with the carbine.

When I afterward looked at a moose and thought carbine—carbine went into the trunk, as a weapon only fit for use in the hands of the most expert marksman.

We left New York on the 9 p.m., arrived at Beauce Jct., P.Q., at 11 a.m., drove fourteen miles on a bone breaker and arrived at St. Francis about 3, where we dined and started at once for St. Justine—thirty miles distant.

The "propriétaire" of the hotel was told to charge our dinner, the ale which we took with us and cost of driving thirty miles until we should return, the

idea being that if I was shot, I should not have to pay at all. This was discounting future possibilities to an extent that was highly gratifying to me, and the grin that opened up Charlie King's features showed me that it was the establishment of a happy precedent that was not displeasing to him.

The fourteen mile drive accustomed us to the dodging of mud balls and the complaints of our extremities. The completed ninth mile of the thirty found us a mile beyond the farm of a French-Canadian—with whom we had stopped to chat a moment—in a road that threatened the demolition of our rolling stock—with the night so black that the French driver gave up all chances of ever entering the Pearly Gates by his direct accusations against the Almighty, as the author of all our trouble. It was raining also, and if the Ruler of the universe was unaware of that fact, it didn't take Frenchy long to impart the information, in rare expletives "made in Canada." We turned around and the mere fact that it was done successfully was proof that we were not held accountable for the Frenchman's sins.

Back to the farm we went and were received very graciously. There was a four-room house containing the merest necessities of life. The man and wife—about forty-five—had been the most cheerful of workers, and were really worthy of their hire. They had thirteen children—two married, four dead, and seven in the house—the oldest not over eleven, the youngest in the cradle with the cholera, and every mother's son of them with dirty faces, dirty legs and feet and unsavory *tout ensemble*. Only the man spoke English. We were invited to take his bed, but visions of other unhappy nights spent in Canadian farm beds suggested the advisability of taking to the barn in company with the horse and chancing rats, so, after a few drinks and a little chat with pater, off we went with a lantern, and at exactly 8.30 o'clock turned down the wick to a minimum light—laid down on a pile of hay and went to sleep much after the manner of the babes in the wood. I awoke shortly thereafter with the conviction that a rat had overturned the lantern setting fire to the hay, and that we were in for a good

roasting, but there stood the light and there lay Charlie peacefully sleeping, so I said my "Now I lay me" again and knew nothing till called at 5 o'clock.

For breakfast we ate boiled lamb, "potak" (potato) and leek stew, sour bread that might have been moulded into bullets and used with effect, and drank terrible coffee. We paid the man \$2.00 voluntarily, which completely unnerved him, then drove away with the whole family standing at the door supremely happy.

The thirty miles completed, we were told to drive four more, to the hotel, and there at 12.30 o'clock we found our guides, Ed. and Nat, with a man and his wife, who had just come out from camp, where they had spent two weeks in a vain effort to get moose. The weather had proved very bad. Hard rains, wind and a swollen river made the chance for moose very poor, and all they had to show was a good sized black bear, which, by the by, is good enough for anybody. We ate dinner immediately and started at once for the camp, driving four miles over a heart breaking road on a springless wagon and hoofing the remaining eleven through mud, over fallen trees and around impassable barriers until, night setting in, with no moon or stars, found Nat and me at the beginning of an old "tote" road, a mile and a half from camp. Ed. had forged on ahead followed by Charlie, and had reached camp about this time.

Nat, who was struggling with a pack over his shoulders and a game knee, had allowed me to go ahead and feel the way for him. The dead centre of the soul of a corpse bound for the infernal regions could not have been any blacker than the night, and every step had to be felt before taken. Nat stood his game leg and load as long as he could and then told me in language plentifully interspersed with dashes to shoot my gun three times in the air as a signal to the camp that we were in trouble—that it was the blackest night ever made and he could go no further without light; so the shots were fired and we continued to struggle along, at one time over our ankles in mud, at another stumbling against rocks to the side of the road, until two jack lights, with Ed behind them, came to our rescue

and made the remainder of the old "tote" road comparatively easy.

A quarter mile by canoe brought two very tired, wet and disgusted men to camp, where supper was found ready. This was Saturday night—we left New York Thursday—our trunks with my bag and overcoat, were to be brought to us by Harry the following day, but as they did not show up Sunday nor Monday, Ed footed it back again to find that Harry had started all right enough Sunday morning, but had broken down five miles from home, and, returning with part of the harness to make necessary repairs, found, upon getting back again, that some—French Canadian had stolen what was left of his harness and my bag, containing—ye gods think of it—three dozen handkerchiefs, two shirts, a suit of underwear, one pair of pajamas, comb and brush tooth brush, soap, woollen socks and a flask of Charlie's. Back he went to town, where Ed found him and they reached camp, without further mishap, Wednesday night for supper.

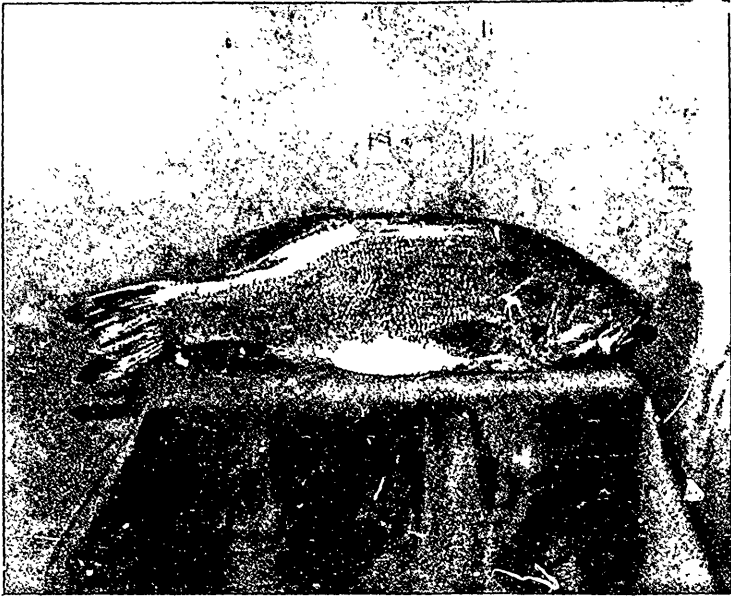
Harry was in great straits about the stolen bag and I was about heart broken—the loss of comb and brush, toothbrush and handkerchiefs seemed irreparable, but I later found a comparatively new toothbrush left by somebody, which I boiled so as not to hurt somebody's nor my own sensibilities, and that trouble was over. I washed two handkerchiefs out of the four I had with me every day and that relieved that situation, and the camp brush smoothed down the top hairs of my head in a "good enough" fashion for camp. We all took a drink with Harry, to comfort the really forlorn man—then we took a drink for my sake, then we took another, preceded by a statement from each as to his special desire regarding a final resting place for the "—French Canadian" who did the trick, and by that time, consideration for the bag having grown smaller and smaller in comparison with our ever increasing appetites, we sat down to a supper of trout, venison, partridge, fried "potaks" and raw onions in vinegar, topped off with half a dozen fresh baked biscuits or squares of corn bread and jam or maple syrup. This menu constituted, either in whole or in part, every

meal. Tomatoes, corn and peas as wanted.

The camp is on the St. John, about ten miles from its headwaters and over 390 miles from its mouth—at no point where we shoot is it over thirty yards wide, and from that to ten yards in a few places it varies. It is lined with alders, fir balsam, hackmatack and pine to the water's edge. The spot and the river and the woods are ideal. Game is so plentiful that it is ludicrous to worry about meat. We want venison; very good—out goes a man and guide and back he comes with his pick of several slots, a yearling, young, tender, juicy, fine. We want trout; small ones for the pan or four pounders for baking; very good—out goes a man and guide and back he comes with what was wanted and fifteen or twenty bottles of pure cold spring water for occasional use. We want partridge; very good—out goes man and guide and given the right kind of a morning, back he comes with the birds: birch partridge, white meat; spruce partridge, dark meat, or both. We want a moose (we want a moose very badly); very good—out go two men, two canoes and two guides, one north, one south. They may be gone three, four, five, six or more hours.

The guides in imitating the cow moose, call Mr. Bull through their birch bark cornucopias. Bull moose is no fool; he was born with big ears and big nose and when he can distinguish cow moose calls within a radius of three miles, which practically covers a territory of about twenty-five square miles, with the cornucopia in the middle, he gives a fair illustration of what might be expected of his nose. One thing is certain, should the wind blow ever so gently toward him the hunter will have no chance for a shot. Deer also being very keen of scent. I took the usual precaution of a scrub for the altogether in the river, finishing up with baby talcum powder, so that I might have good reason for laying the blame on Nat for any game discovering our whereabouts through the agency of the wind.

I later discovered that, if my treatment was efficacious, Nat was in a bad way, so far as the deer was concerned, as it seemed a number of times, judging



SIX POUNDS TWO OUNCES.
One of the Ramsey Lake, near Sudbury, Ont., bass



A FRESH BEAR PELT.
Hunting camp on the North Thompson, twenty miles from Kamloops.



LAKE NEPIGON
Indian mother and child



FOUR OF A KIND.
Mule deer shot in the North Thompson country, B.C.

by their scamperings and whistlings, that they thought there still remained something in Denmark a little off color, so I got Nat to take a bath also. He shied at the talcum powder as he said it was of "no blame use," and he performed the whole operation in such a half hearted manner that future scamperings told me that the job had not been satisfactory to those most interested and they couldn't stand for it. Nat called it all too blanked nonsense and said that the real time was to go when there was no wind; to blank with the bath.

A perfectly still dark night is bull moose's undoing, if luck does the rest, because all still dark nights do not bring a willing bull moose to answer the cornucopia summons—luck plays a part. The cornucopia and the man behind it may succeed in getting the old boy down to a dozen yards of the expectant gunner and three hours of patient coaxing after that fail to get him to budge an inch further. He remains out of sight in the alders.

The night the trunks arrived, Ed. was willing to go out with Charlie, but the latter would not hear of it as he knew Ed. must be very tired, so Nat and I took a chance.

The night was black—-one of the kind that Nat calls "the blackest God ever made"—there was no wind and we put off at about 8.30. If there is any one thing Nat can do to perfection it is to push a canoe along with his paddle in the water continuously with not even a ripple of water ahead or astern and clearing all obstructions in the way of stones or logs in a way to excite admiration; not a sound is made; we sneak along around this bend and that bend, hardly daring to turn our heads and condemning every muskrat in vigorous undertones that make us jump when he dives. There are thousands of them, and on any still night, until one becomes accustomed to them, the silent occupants of the canoe may count on four or five shocks per hour. Nat laughs and whispers: "You ought to hear a beaver." The sound of a muskrat diving is very similar to that of a four pound trout breaking water, and their dives and flops are always made because the canoe comes too close to them while they are crossing the stream.

A great commotion in the alders dead ahead stops the canoe—the commotion continues, and gently, very gently, we go forward again; slowly, deliberately, sneakingly, until the bow of the canoe all but touches the bank. Nat rocks the canoe and I open the jack (whisper it—it's against the law). A scramble to the right makes me think the game is up, but Nat whispers: "Give it to him," and looking again I see through the alders two luminous spots for which I hurriedly aim and pull, because if I don't my heart will break through my throat. Three or four jumps to the left followed by dead silence. Nat swears a little, says that it was a big buck and that if I have missed him I have missed a good one. We found that the bullet had gone straight through an alder about six feet from the bank, and as after careful investigation we could find no marks of blood, we came to the conclusion that I had really missed him.

It was my very first shot under a jack lamp and I shot hurriedly, straight for the eyes, which was, of course, a very wrong thing to do, as if he had been hit the head would probably have been worthless. We climbed back into the canoe and went on up the stream; my heart had gotten back into place and I was betting my very existence (with myself) that the next time I would not shoot for eyes, when I heard a peculiar two or three grunts, which started me guessing—it sounded like a reasonably near frog or a distant moose. I rather incline to the frog theory, and grin at the comparison of a moose with a frog. On we went; I fidgeted in my chair—Nat called me down and told me to keep quiet, as he had heard a moose grunt, so I consigned the frog to a place known to be hot and waited.

Suddenly a series of short grunts came to us from a point not fifty feet away, and away went my heart like an express train—the canoe stopped short, then began sneaking again, on—on—until it stopped beside a fallen dead tree trunk and was rocked again by Nat. I opened the jack (sh) a six foot bank shows ahead of us on the right; nothing more, but a disturbance in the "logan" (a land-locked mud pool—probably from lagoon) on the other side of the bank, tells the story.

I close the jack again and think I am in particularly hard luck as the fear comes to me that the game is up. We back away a short distance and a moment later, Mr. Moose, evidently wondering what that light could mean, climbs the bank, making considerable disturbance.

I open the jack (sh) and, jumping Jerusalem! there stands a ten thousand pound beast with antlers stretching twenty yards apart and with two green spots between them that transfix my vision—I see nothing but green spots again. "Give it to him," whispers Nat, and bang goes 50-110 with a bullet which I thought would be quite sufficient; he turns and I give him another aimed at the seat of his pants, but without much hope of bringing him down; back he goes into the "logan" and Nat whispers a string of dashes. I say mean things myself inwardly and outwardly. Why did I shoot for the eyes again after the first experience of the evening?

I swore and raved while the bull moose was going through some very queer exercises on the other side of the bank. Suddenly he started, away from us at first, then to the right, and Nat, who knew his little book, swinging the canoe around, paddled like a fiend back over the ground we had come, around a bend and into narrow water, but bull had been quicker and had crossed the stream, climbed the bank and was now twenty-five or thirty feet back in the alders, thrashing around in a manner that gave me a great deal of encouragement, because it seemed that he must be hurt. Nat thought so, too, and that settled it in my mind, so I patiently waited, expecting every moment that the thrashing would stop; instead, it came nearer and nearer, until—could it be possible?—out he came with a rush from the alders to the edge of the bank and the jack (sh) instantly opened, revealed the two luminous spots again. I was getting a little experience. I shot below the eyes and head first into the stream plunged seemingly two hundred thousand pounds of meat, horn and eyes.

We backed down stream and waited; the two green spots pointed our way for a moment and then disappeared, and a few minutes later we paddled to his fallen

greatness and saw a big six or seven year old grey moose. His entire body was submerged and only one prong of his antlers stood clear of the water, but we lifted the head clear and measured the forty-seven inch antlers and counted the eighteen points thereon. It proved a very symmetrical, beautiful specimen, which was hard to leave even though it was midnight, but we finally paddled away into the night to camp, where Charlie and Ed. listened to the whole story with blinking eyes. I slept that night like a pirate.

The entire next day, Thursday, was spent by all four men in cutting off the head and two fore hoofs for me, taking each leg off at the shoulder and rolling the body out of the river up the bank and into a deep grave along with the legs—one of the rules of the camp. We found his lower jaw broken, a flesh wound in his back trousers and a hole in the middle front of his neck, which was probably the *pièce de résistance*.

It was Sunday before the job of skinning the head was completed, the antlers and upper jaw placed in the sun on the river bank, the lower jaw hung on a tree and the skin pickled and hung up, and from where I sit in the canoe writing I occasionally look up and see his royal highness sunning himself dry before going to the taxidermist.

When I left camp a week later Charlie, who had worked every moment of the good intervening time, was still without his moose. He had a fine shot at one with eight points, but refused it, hoping for better things. This bull, whose chief characteristic was an enormous "bell," was found at dusk lying down on a little sand bank just above the spot where mine was secured, and was evidently courting the widow of my moose.

Two days later, at 11 o'clock in the morning, Charlie came upon a bull, a cow and a spike-horned yearling moose standing out in full view, at a distance of 100 yards from a bend in the river which he had just rounded; seven shots put the gentleman out of business. He had a 45-inch spread of antlers with 14 points; a little smaller in both those particulars than mine, but they weighed nine pounds more.

Chats About Driving.

BY "MEADOWBROOK."

FOUR IN HAND DRIVING.

Use your left hand almost exclusively in managing the reins. When you wish to turn a corner to the right, bend your wrist over so as to bring your thumb underneath toward your left hip; if on the contrary you wish to turn to the left, bring your little finger underneath and incline it toward your right hip.

To mount: Take up the leader's reins in the left hand and place them on either side of the middle finger of the right hand, then take the wheel reins and place them on either side of the third finger of the right hand. The off side reins should be several inches longer than those of the near side, and then they will be level when on the box.

With the reins in the right hand the coachman catches hold of the loop or lamp iron with his left, and places his left foot on the wheel box. His right follows on the roller bolt, the left then reaches the step, and the movement of the right lands him on the box. He should immediately sit down.

The reins are then transferred to the left hand, the position of each rein being the same as for tandem, the whip, already caught up, taken from its bucket, and with a "sit fast," and "stand away," the coach is in motion. The wheelers must start the coach.

Eight or nine miles an hour is a good pace for a coach over perfect roads.

Three hints it is well to remember are, "Don't apply the brake too often." "Don't let the leaders do too much on the flat, or any work going down, but make them pull going up hill."

Should the coach rock, increase the pace so that the leaders may steady it by pulling on the pole. By the way, poles are usually too long. Ten feet eight inches is about right when the wheelers are 15.3 in height.

Whips may be of holly, yew, or black thorn; the stick five feet long and the thong twelve feet.

When turning, catch up the opposite wheel and loop it under the thumb,

to prevent the wheelers turning too quickly.

A thorough mastery of the whip is essential. With the long thong of a four in hand whip it must be caught around the stick after hitting a leader, as it may get entangled in the wheels, and in any case would be a nuisance. The point should be of leather, not silk or whip cord.

The wheelers must always be put in first and the outside traces made fast before the inside traces are fastened. When taking out, reverse the process. The latter may be a half hole shorter than the outside, as most wheelers incline toward the pole.

For a man who wears a No. 8 or No. 9 glove, the reins should be $1\frac{1}{4}$ inches wide and moderately stout.

Buxton or elbow bits are best for heavy coach work. The bit must suit the horse, and most horses will go well in a shifting bit with a smooth and a rough side to the bar.

NEW JUDGING RULES OF THE COACHING CLUB.

The Drag.

The drag should have a perch and be less heavy than a road coach, and more highly finished, with crest or monogram on the door panels or hind boot.

The axles may be either mail or collinges (not imitation).

The hind seat is supported by curved iron braces, and is of a proper width for two grooms, without lazy back.

The lazybacks on the roof seats should be turned down when not in use.

The under side of the footboard, together with the risers of the box and coachman's seat, should be of the same color as the under carriage.

The body of the drag and the panel of the hind boot should correspond in color.

The door of the hind boot to be hinged at the bottom that it may be used as a table when open.

The skid and safety hook (if carried) should be hung on the off side.

It is customary to trim the outside seats in either pigskin or cloth, and the inside of the drag in morocco or cloth.

The coachman's driving apron when not in use should be folded on the driving cushion, outside out. Passengers' aprons (if carried) to

be neatly folded and placed on the front inside seat.

A watch and case are not essential, nor is the pocket in the driving cushion.

There should be no luggage rails or straps on the roof, between the seats.

Inside, the drag should have: Hat straps fastened to the roof. Pockets on the doors. Places over the front seat where the lamps may be hung when not in use. An extra jointed whip. An umbrella basket, to be hung on the near side. Lamps off. Lamps inside coach. Two extra lead bars, consisting of a main and side bar fastened to the back of the hind seat with straps. Main bar above. Lead bars put on with screw heads of furniture up.

The following articles to be neatly stowed inside the front boot: A small kit of tools. An extra lead and wheel trace. Loin cloth for team, and the necessary waterproof aprons, should be carried in a convenient and accessible part of the drag.

It is usual for a park drag to be fitted with luncheon boxes, wine racks, etc., also a box on the roof called an "Imperial." This latter is never carried except when going to the races or a luncheon.

The grooms to be suitably dressed.

Park Harness.

Pole chains must be bright and have spring hook. The chains should be of a length which will admit of snapping both hooks into the pole head ring. If too short, one end may be hooked in the pole head ring and the other in a link. If too long, they shall have one end snapped in the pole head ring and the other brought through said ring (from the outside in) and snapped in a link.

Crupper on all horses.

No loin straps, or breechings.

Face pieces (drops).

Martingale around the collar and not through kidney link alone.

Martingales on all horses.

No rings on coupling reins.

Mountings of coach harness, and the buttons on servants' liveries to be of the same metal.

Wheel traces with metal loop ends, not drains.

Wheeler's inside traces shorter than outside traces, unless the inside roller bolt is enlarged to give the same result.

Lead traces straight or lapped, not crossed.

Eyes on ends of hames through which the kidney links pass.

Plain kidney links.

Solid draught eyes on hames.

Clip inside of tracç leather, and showing rivet heads only.

Full bearing reins with bit and bridoon.

Single point strap to tug buckle.

Metal front to bridles.

The crest, or monogram, should be on the rosettes, face pieces, winkers, pads, and martingale flaps.

Ribbon or colored rosettes are inappropriate.

Hames straps, put on with points inside: i. e. to the off side on the near horse, and the near side on the off horse.

Coupling rein of low-headed horse underneath.

Reins of single brown leather.

Draft reins sewed in one piece with end buckles only.

Lead traces with screw heads of the cockeyes up.

Close coupling all around.

All parts of the harness should be doubled and neatly stitched.

Collars to be of black patent leather, shaped to the neck; the top bent back.

The hames bent to fit the collar accurately.

Harness black. All straps should be of proper length and not too short.

When the owner or his representative drives, the shutters should be down; otherwise up.

The Coach.

The road coach should be built stronger than a park drag, especially as to the under-carriage and axles, which latter should not measure less than two inches in diameter.

The axles may be either mail or collings (not imitation).

The hind seat is usually supported by solid wooden risers, but the supports may be of curved iron, as in a park drag. Its seats should be wide enough for two beside the guard, who should occupy the near side with an extra cushion. He should have a strap to take hold of when standing to sound the horn.

The lazy backs of the box seat, hind seat, and roof seats are usually stationary.

The under side of the footboard, together with the risers of the box, coachman's seat and rumble, should be of the same color as the under-carriage.

The body of the coach and the panel of the hind boot should also correspond in color.

The door of the hind boot to be hinged on the off side, to enable the guard to open it from the near hind step when the coach is in motion.

The skid and safety hook must be hung on the off side in countries in which it is customary to drive on the off side of the roadway, for the skid should be on the outside wheel or the coach will slide towards the ditch.

The trimming of the outside seats may be of carpet or any other suitable material, not leather. The inside of the coach is usually finished in hard wood or leather.

The coachman's driving apron when not in use should be folded on driving cushion, outside out.

A footboard watch with case to be provided. The driving cushion to have a pocket on the near side.

The iron rail on the roof between the front and back seats to have a lattice or network of leather straps to prevent small luggage, coats, rugs, etc., placed on the roof, from falling off.

Inside the coach should have: Hat straps fastened to the roof. Leather pockets at the sides or on the doors. An extra jointed whip.

The basket to be hung on the near side and in front of the guard's seat. The horn to be placed in the basket with its mouthpiece up.

Lamps in place and ready for use.

Two extra lead bars, consisting of a main and a side bar fastened to the back of the hind seat with straps. Main bar above.

Lead bars put on with screw heads of furniture up.

The following articles to be neatly stowed in a convenient part of the coach: A wheel jack. A chain trace. An extra bit. Two rein splicers (a short strap of the same width as the reins with a buckle at either end.) A kit of tools, comprising a wrench, hammer, coil of wire, punch, hoof-pick and a knife. A bearing rein.

The guard to be appropriately dressed and to have a waybill pouch with a watch fitted on one side and a place provided for the key of the hind boot.

Road Harness.

Pole chains may be bright or black, but pole head and chains must be alike. Hooks with India rubber rings, not spring hooks.

Chains with single hooks must be put on pole head from inside out, then passed through the kidney link and hooked into one of the links of the chain.

Cruppers on wheelers, but not necessarily on leaders, unless bearing reins are used. Some road coaches use no saddle pads, the traces being held up by trace bearers from the collars. but this savors too much of the "bus" order.

No loin straps or breechings.

Face pieces (optional.)

Martingale around the collar, and not through kidney link alone.

No martingales on leaders; kidney link rings on leaders.

No rings on coupling reins.

Mountings preferably of brass, but at least all of the same metal throughout.

Wheel traces with French loop or chain ends. Chain put on roller bolt with chain out and ring in.

Wheelers' inside traces shorter than outside traces, unless the inside roller bolt is enlarged to give the same result.

Lead traces lapped, crossed or straight.

Hook ends to hames.

Chain and short kidney links on all chains.

Ring draught eyes on hames.

One or more bearing reins are optional.

Cruppers with or without buckles. New-market straps should be double.

Metal or leather front to bridle. If leather, the color to match the coach.

A crest or monogram is not generally used in road work, but instead lead bars or a special device in brass is put on the winkers and rosettes.

Hames straps put on with points inside; i.e. to the off side on the near horse and the near side on the off horse.

Reins of single brown leather.

Draft reins sewed in one piece with end buckles only.

Traces with screw heads of the cockeyes and chain ends up.

All straps preferably of single leather.

Collars may be of patent, plain black, or brown leather; straight, thick, and full padded.

The hames straight to fit the collar.

Harness, black or brown.

For Park Drags.

The servants to be trim and nearly of a size (the head groom being a trifle larger and

heavier). Smooth shaven as to the upper lip and chin. In proper liveries, consisting of:

Stiff-legged top boots, white breeches, preferably of leather (may be stockinet). Waist-coats generally of some striped satinet, showing a trifle above the coat collar. Coats smartly cut and well fitting, rather full in the skirt.

The head groom's coat to be a trifle longer in the skirt than his fellow's, and to have pockets with flaps, which the others should not. Collar of the coat, plain or velvet. The customary white scarfs and standing (so-called coachman's) collar.

Hats of proper shape, not extreme, and with no cockades or other ornaments unless the owner be an officer or ex-officer in the army, navy, or diplomatic service, where the former are permissible.

The head groom stands at the off wheeler's head and his fellow in front of the leaders. When the coachman signals "ready," both grooms saute, at the same time stepping to one side a trifle. As the coach passes them, the men so measure their distance, that each can put the inside foot on the lowermost step at the same time, and ascend to the hind seat together.

ODDS AND ENDS.

When buying a carriage horse, seek one with as few bad points as possible, rather than search for impossible perfection.

Great speed is not desirable in a gentleman's driving horse. High action and handiness are much more desirable qualities; as a rule, the extremely fast horse has a long gait, which makes him unhandy.

Too young horses are not to be recommended for harness work. Six and seven years are better ages at which to buy than four years, as youngsters are more likely to go wrong, throw curbs, etc. A horse well taken care of should last until twenty years of age.

Fifteen to twenty miles a day for five days in the week is good work for a carriage horse, and then the pace should not usually exceed eight or nine miles an hour.

Don't "guess" at what ails your horse; should he fall sick, consult a qualified veterinary surgeon. His fee will probably be really money in pocket in the end.

Material defects in a carriage horse are: Bad cases of bone spavin; blindness; vice, viz: kicking, bolting, rearing or baulking; navicular disease; being "nerved," or badly broken-winded.

When practicable, a horse should be fed five times a day :

6 a.m., hay,

7 a.m., oats,

Noon, hay,

1 p.m., oats,

6 p.m., hay and oats.

He should receive at these feeds 12 lbs. each of good old oats and hay.

The bedding should be the best wheat straw. Fresh green forage is valuable in hot weather, and beans and peas may be mixed with the corn, when horses are doing hard, cold work, provided always that animals under six years of age are generally better without much stimulating food.

Oats should weigh at least 39 lbs. to the bushel.

Very warm stables are a mistake—though the strappers like them, as the horses' coats look better in a hot stable, and less elbow grease is required to make them shine.

Water should always be within reach of the horse; he will then rarely drink more than five gallons a day, whereas if watered but thrice, he will often drink eight gallons.

It is a wise plan to give each horse a bran mash once a week. Recipe: Put the quantity required in a rough cloth and tie it up. Steep for a short time in a bucket, having enough boiling water to moisten the bran. Wring the water out of the mash by twisting the neck of the cloth. Then open and cool somewhat.

Gruel is a capital thing for a tired horse. Recipe: Two fistfuls of oatmeal

placed in a bucket, and boiling water added until the consistency of cream is reached; then cold water is poured in until the water is at blood heat. Give before it cools.

The coach-house should be dry and well ventilated, and kept free from dust. Cushions of all carriages ought to be covered with holland wrappers when not in use, or a cotton or linen stable cover used to protect the entire carriage.

A carriage is best washed before the mud on it has had time to dry. Water, if left on, will spoil the varnish.

Carriages should be examined frequently. Axles need greasing, washers replacing, and poles, springs, and shafts inspecting and testing.

Harness-room and carriage-house should be distinct from the stables, and the former should have a stove, hooks, brackets, pegs, and a glass case for bits, etc. The ammoniacal fumes from the stable, if allowed to penetrate, would ruin harness and varnish.

Collars must fit, and each horse should have its own. These should be washed with soap and water and thoroughly dried after using, but not before a fire. A false collar of flat, thin leather is useful to prevent collar gall in tender-skinned horses.

To avoid mud fever, never wash a horse's legs when he comes in tired and muddy; merely brush off and bandage.

Ponies under fourteen hands are better with very short hogged manes, but anything over that height should not be hogged.



The fuel crisis which was forced upon Canada by the recent scarcity of coal brought very forcibly home the question of the supply of wood. It is surprising how little consideration is given to the matter even by many of the agricultural communities. There are large numbers of farmers who are buying wood and coal who could quite easily have a sufficient supply of fuel for themselves if they would only take the little trouble necessary for the purpose. In many such cases they are the owners of sufficient land unsuitable for cultivation to

give all the wood they require. The inadequate ideas which prevail as to the value of woodlands is illustrated by the offer made by one farmer not far from the capital of the Dominion, who had kept no woodland on his farm, to another who had been more provident in this respect, of \$300 for ten acres of bush land. The reply to the offer was that there was one hundred cords of wood on each acre, which at \$3 per cord, a modest price surely according to our present ideas, would make \$300 for one acre. So he went away sorrowful.

Why Partridge are Scarce.

BY ABEL JOHNSON.

A very critical person on reading the above heading might suggest that the reason partridge are scarce in Eastern Canada is that there is none. But after all every Canadian sportsman knows perfectly well what is meant.

The first settlers in this country, prompted thereto by a mysterious spirit of perversion, called grouse, partridge; and thrushes, robins; and hares, rabbits; and committed many other similar enormities, possibly in a large measure to show their complete independence. The ruffed grouse is the bird the Canadian of the backwoods means, when he speaks of partridge. He further divides his partridge into two species; and he is very careful to refer to the one as the birch and the other as the spruce partridge, showing that even if he does not follow the teachings of the scientific naturalist, he at any rate has an intelligent knowledge of the grouse of his native forests.

But this disquisition has led me away from the subject I intended discussing—which was, why are the grouse, or partridge, so scarce this year? If anyone has found the birds even moderately abundant in the Province of Quebec since the season opened, his experience has been the reverse of my own and of every man whom I have questioned. Ground that held a heavy stock of birds last year hardly holds one this autumn. The reason of this scarcity was the cold backward weather we experienced in the nesting season. The eggs were chilled and most of them failed to develop into a chick, or, when the youngsters actually broke the shell, they could not stand the perpetual moisture and thus perished. The old birds seem to have suffered, probably through having spent their strength in trying to hatch out eggs that had been killed by the cold. It, therefore, happens that you may pass along the woodland roads of this province without hearing the merry drumming of the cock bird, and without being pleasantly startled by the sudden flushing of the brown woodland grouse.

I am afraid two or three years must elapse before the partridge of Quebec can be as abundant as was the case last year and the year before. However, every cloud has its silver lining and what we have lost in one direction, we seem to have gained in another. Never have deer been more plentiful, never at least of late years; and the big black moose has strayed back into regions from which he disappeared a dozen years ago. Strange as it may seem the reason of this increase is, almost undoubtedly, to be attributed to the increase of settlers. In the Laurentians there is little good land and the farms are in most places scattered, and considerable tracks of forest intervene between the clearings, so that there is an abundance of covert for deer, and, occasionally, sufficient covert for moose, in districts containing a considerable number of farms. The backwoodsman is generally not a great hunter—even a cursory examination of his firearms will show that he is very unlikely to do much damage. Rusted grooves and leaded lands, shaky stocks and verdigris stained cartridge cases are not signs of a successful killer of big game.

The deadly enemy of the deer and also of the moose calf, is the wolf, and so cowardly an animal is he that even a sparsely settled district is one that he will avoid. It is said, and I think the saying is true, that the wolf will leave a district in which he can smell smoke, and his olfactory powers are so wonderful that he can wind smoke from the settler's fire at an almost incredible distance. The deer, on the other hand, soon becomes reconciled to the near presence of man, and by remaining in the vicinity of the clearings, is enabled to bring forth its young and live out its life in safety from the most bloodthirsty beast of prey we have on this continent. The toll taken by the settler is very much smaller than the toll taken by the wolf, hence the increase in the deer in the lands watered by the Rouge, Lievre and Gatineau.

The Black Walnut.*

The Walnut is one of the best known trees in Western Ontario. In the pioneer days it was often burnt in log heaps or split into fence rails, but from the time when it was taken out as square timber for export, or when it became the favourite wood for furniture, it has always been regarded highly, and it is difficult to appreciate the attitude of those who wasted it carelessly in ignoble uses in the days of its plenty or cleared it away severely and ruthlessly. It is a graceful and handsome tree, and may be found ornamenting the sides of many of the country roads or drooping its beautiful canopy over farm gates and fences, where it is a great attraction to the squirrels which, in the fall, keep themselves busy running about nibbling at walnuts and chattering angrily at anyone who dares to disturb them or approach too near what they consider their special preserve. The photograph in this issue shows a walnut tree which beautifies the entrance of a Western Ontario homestead and where, alas! many a squirrel has had his exit from this mortal stage hastened by the boy and the gun.

The English Walnut (*Juglans regia*), or as it might more correctly be called the Persian Walnut, was cultivated in Palestine in the time of Solomon, and its common name reveals that it came as a stranger, for the Anglo-Saxon words from which it is derived mean "foreign nut." Among the Romans it had various names, and one of them is continued in the generic name *Juglans* (*Jovis glans*), the nut of Jove or Jupiter. It was therefore held by them in high esteem. It was the royal nut (*regia*). The new world species is however a different one, being distinguished by the specific name *nigra* (black), which will be recognized as particularly fitting by those who know the dark, handsome wood which it produces. The distinguishing feature of the foliage is the large number of leaflets, from fifteen to twenty or more on each leaf. In this respect it closely

resembles the butternut, but the stems are not easily distinguished by their general appearance but, growing in the open, the butternut as it increase in age assumes a spreading, straggling shape, while the walnut is of a more erect habit. The bark is a grey brown, becoming furrowed as it grows older. The inflorescence, appearing in May, is inconspicuous like that of most trees, justifying the poet's comparison:—

See the proud tulip's flaunting cup
That flames in glory for an hour,
Behold it withering—then look up—
How meek the forest monarch's flower,

Indeed it is remarkable how many people never know that trees have any flowers at all, never reflecting that where there is the fruit there must be the flower to prepare the way, and that every plant is fully equipped in ways varied, yet ever strangely similar, for its great work of producing its kind, and that these organs are not less wonderful when small and inconspicuous, but are the more remarkable for their delicate perfection. The staminate flowers which supply the pollen to fertilize the solitary or few clustered flowers from which the nuts are produced, are in drooping green catkins from the wood of the preceding year. The nut is ripe in October and is encased in a spherical green-coated husk, within which is a dark-brown, sharply cut, rough, hard shell, which encloses the edible kernel. The fruit of the Black Walnut, though not equal to that of the English Walnut, has a sweet, pleasant taste and the gathering of these nuts for commercial purposes is made a regular business in some districts.

Black Walnut long held the first place as a furniture wood, but the vagaries of fashion and the increasing scarcity of this tree have combined to relegate it to a less important position, the light-colored woods being given the preference. It is still highly prized, and nothing can be handsomer than some of the beautiful finishing or veneers in this wood. Rose-wood has been entirely displaced in piano

* Contributed by the Officers of the Canadian Forestry Association.



NO LONGER DANGEROUS.
One of Billy Manson's tame bears



THE BLACK WALNUT.

One of the most valuable species found in Ontario

cases by veneers of walnut and other woods, and the beautiful cases thus produced have a very rich effect. There is no room for doubt that walnut will always be in demand. Young trees are growing up, and it is to be hoped that from this source of supply the wood may become more plentiful. The walnut grows quickly, and will make board timber in twenty-five years, but it is only as the tree gets older that the heart wood assumes the rich uniform dark brown color which is its chief recommendation. There is some difference of opinion as to whether it is the most profitable tree to grow. It has the largest average stumpage of the trees of North America, and stories are frequently given of the high prices paid for old stumps. It is pointed out, however, that these old stumps are usually purchased for the purpose of making gun stocks and that the shaping of the roots makes them the most valuable for this purpose.

Experiments in walnut growing have been undertaken to some extent in Canada. His Honor Sir Henri Joly de Lotbinière has for many years been doing considerable work in this direction on his estate in the Province of Quebec, and with good success.

In May, 1895, Mr. Thos. Conant, of Oshawa, planted 5,000 Black Walnut trees obtained from a nursery, and of these, in six years, forty-five per cent. had grown fully fifteen feet high and three inches in diameter, twenty-five per cent. had about doubled their size and twenty-five per cent. had merely existed, while only five per cent. were lost. The owner estimates the value of this land at \$500 per acre, an increase of five times its previous value, as \$180 per thousand feet could easily be obtained there at any time for black walnut.

The Gooderham Company, of Toronto, also started a walnut plantation, some time ago, near Oakville, in regard to which we reproduce the following notes:

"We commenced, about five or six years ago, to plant young walnut trees in rows about five feet apart. The soil was light and loamy and exceedingly well manured both before and after planting. The trees have done fairly well, not more than ten or fifteen per

cent. dying, although we have noticed that they are sometimes so late in leafing the year after planting that one might be tempted down to the month of July to suppose the most of them dead. A great many of them died off but grew up by the root. This, no doubt, was a disadvantage, and for this and other reasons, it seems to us better to plant the nuts, which we have done from year to year with great success. It is true squirrels take a great many of them, but there always seem to be plenty left. We first planted a nursery, putting the nuts only a few inches apart in rows about five feet apart and subsequently transplanted most of these trees so as to leave good stock about five feet apart in each direction. In some cases, in transplanting, we have had very bad luck, especially when the season was wet, a great many of the trees having died. Latterly, we have been planting about two walnuts in holes about five feet apart, the intention being to destroy the weaker shoot and leave the stronger one to grow. We cultivated several times a year between the rows except among the older trees where the leaves are now so thick as to check the growth of weeds and grass."

The nuts may be gathered in October, and the Forestry bureau of the United States give the following instructions in regard to storage. If they are to be stored over winter, it is better to remove the husks. One simple way of doing this is to bore in a piece of board an angular hole about the size of the average nut, then drive each nut through this hole with a blow from a hammer, the husk being cut off by the edges of the hole. The nuts may then be dried slightly to prevent destructive moulding, but not sufficiently to destroy the vitality of the seed. For winter storage, a shallow excavation should be made in well drained soil, a layer of nuts six inches in depth placed therein, covered by six to twelve inches of leaves, chaff or straw, and over this four to six inches of earth. To prevent the washing away of the earth, a covering of boards or slabs may also be provided, and the sides should be well banked up to prevent mice or other rodents from doing damage. Frost will not do any harm but may assist in opening the nuts.

Draudt's Method.

BY A. KNECHTEL, F.N.Y.S.F.F. AND G.C.

By this method of estimating the timber content of an area, the sample trees when placed together present an exact model of the stand, and show the relationship of size classes as to number of trees. In the sample trees all diameter

to the whole number of trees of the stand. The percentage may either be chosen directly, that is, we may say that there shall be felled as sample trees, 1, 2 or 3, etc., per cent. of the whole number of trees; or the total number of

AN EXAMPLE OF DRAUDT'S METHOD.

Species.	Diameter.	Number of Trees.	Basal Area. Sq. Ft.	P=1% Multiplied by Number of Trees.	Sample Trees.				The Stand.		
					Number.	Basal Area Should be Sq. Ft.	Basal Area really is Sq. Ft.	Volume.		Volume.	
								Cu. Ft.	B. M.	Cu. Ft.	B. M.
White Pine	8	22	7.68	0.22							
	9	77	34.02	0.77	1	.4418	.4517				
	10	97	52.90	0.97	1	.5454	.5675				
	11	162	106.92	1.62	2	1.3200	1.2962				
	12	40	31.42	0.40							
	13	100	92.18	1.00	1	.9218	.9360				
	14	115	122.94	1.15	1	1.0690	1.0690				
	15	88	107.99	0.88	1	1.2272	1.2272				
	16	160	223.41	1.60	2	2.7926	2.7752				
	17	182	286.89	1.82	2	3.1712	3.1712				
	18	45	79.52	0.45							
	19	67	131.92	0.67	1	1.9689	1.9689				
	20	88	191.99	0.88	1	2.1817	2.1599				
	21	110	264.58	1.10	1	2.4053	2.4283				
	22	86	227.02	0.86	1	2.6398	2.6398				
	23	22	63.47	0.22							
	24	14	43.98	0.14							
	25	85	289.75	0.85		3.4088	3.4088				
		1560	2358.58	15.60	16	24.0749	24.0997	1014.4	4024	102212.93	393819.25

$$\text{Volume of stand} = \frac{2358.58}{24.0997} \times 1044.4 = 102212.93 \text{ cu. ft}$$

or

$$\text{Volume of stand} = \frac{2358.58}{24.0997} \times 4024 = 393819.25 \text{ B. M.}$$

classes of the stand are represented, and the same relationship exists between the sample trees of the different diameter classes as exists between the diameter classes themselves.

It is first decided what proportion the whole number of sample trees shall bear

sample trees to be felled may be decided upon, and then from a consideration of these and the total number the percentage can be reckoned.

Suppose, for example, the number of trees of the stand to be 1780 and that 25 sample trees are to be felled. Then,

$$1780 : 25 :: 100 : p.$$

$$p = 1.4 \text{ p.c.}$$

$$V = \frac{v \times 100}{p}$$

The number of sample trees for each diameter class is then found by multiplying the number of trees of each class by p . Fractions of 0.5 or over, resulting from the multiplication are reckoned as a full inch, and those under 0.5 are discarded. Should several neighboring classes furnish no sample tree each, or rather only a fraction under 0.5, several classes may be grouped together according to the size of the fractions. Finally the sample trees should be added together to see if these agree with the whole number decided upon at first. Differences which are caused by rounding off the fractions are then balanced. In order to avoid too many fractions of sample trees the diameter classes need not be made too small.

Sample trees are then, according to sizes and number, selected in the forest. After being felled they can either be cut into sections, say, four feet long, and their volume accurately measured, or they can be worked up in the usual way for sale.

According to the principle of the method the sample wood likewise presents the chosen per cent. of the volume of the stand. The volume of the stand, then, is to be reckoned by the formula

On account of rounding off the fractions due to fixing upon the number of sample trees, this relation does not exactly hold, and instead of the quotient $\frac{100}{p}$ according to Draudt's proposition that of

The sum of the cross areas of the stand
The sum of the cross areas of the sample trees

is instituted, and by multiplying this quotient by the volume of the sample wood the volume of the stand is found.

If the sample trees are worked up, keeping the sorts of wood separate, each sort will present the chosen per cent. of that sort in the whole stand, and the volume can be determined as explained in the foregoing.

The disadvantages of the method are that in rounding off the fractions of sample trees in each class inaccuracies occur, and that frequently no sample tree at all is taken from classes which contain only a small number of trees. The larger the stand, the larger will be the number of trees in each class, and hence the more accurate will be this method when applied to the stand.



A meeting of the Board of Directors of the Canadian Forestry Association was held at Ottawa on the question as to whether the association was in a position to undertake the publication of a paper wholly devoted to forestry interests, and the secretary was instructed to obtain estimates and other necessary information and report fully to the Board. A proposal was also submitted that in addition to the annual meeting held at Ottawa in the winter there should be a summer meeting at some other place. This was favorably considered, and it was suggested that the first of

such meetings might be held in the West. Arrangements for the annual meeting to be held at Ottawa in March next were made, and it is expected that the papers to be submitted will be as fully representative and as important as those which have been published in previous annual reports. It was decided that representations should be made to the Provincial Governments of the important work that the association was doing with the object of obtaining such assistance as would help in the extension of the work and a wider distribution of literature.

Our Medicine Bag.

We esteem ourselves as fortunate inasmuch that the present issue of *ROD AND GUN* contains, exclusively, a new poem by our great Canadian poet, Dr. William Henry Drummond. "Bruno the Hunter" treats of subjects that Dr. Drummond has made himself an acknowledged master of. In his own field he is inimitable and without a serious rival. We beg our readers to consider these verses as a Christmas gift from one of our best known sportsmen to his brothers of the gun and rod. In addition to being a charming effort of the poetic imagination, "Bruno the Hunter" contains a very admirable moral.

The standard work upon the ichthyology of this continent, north of the Isthmus of Panama, is "The Fishes of North and Middle America," a book of four volumes and more than three thousand pages, by Professor David Starr Jordan, President of Leland-Stanford Jr. University, and Barton Warren Evermann, Ichthyologist of the United States Fish Commission. But so comprehensive a work is only needed by those who wish to study the fishes of this western continent very seriously, and these talented writers have been well advised in the bringing out of "American Food and Game Fishes," a more popular though equally trustworthy guide. This new addition to the series of nature books published by Doubleday, Page & Co. will charm the angler as well as all those who are interested in the finny inhabitants of our seas, lakes and streams. The authors of this volume are too well known to need any introduction; let it merely be said that upon a foundation of exact scientific knowledge and research they have built a popular and altogether fascinating book, giving the reader all that is worth the knowing on the subject of our food and game fish, and of the methods by which they are captured.

The illustrations are of extraordinary merit. In addition to the ten lithographed plates in colors, there is a most

remarkable series of photographs of over one hundred species taken from the life. This work was done by Mr. A. Radclyffe Dugmore, who, in order to obtain his material, visited many widely-scattered localities, and was at great pains to make these, the first really successful photographs of living fish ever secured.

This is one of the indispensable books that a scientific angler cannot afford to be without. It is scholarly, and yet at the same time practical, and the publishers have done their part in a way that is above praise.

Opening the book at the beginning of an article on the Pacific salmon, we became immediately interested, as much of our experience has been gained in British Columbia. Speaking of the spawning habits of the quinnat and the redfish, the authors make statements that are in the main in accordance with our own experience, but it is not surprising to find slight divergences from what we have observed, seeing the complexity of the subject and the difficulty attendant upon a thorough investigation of the ways of these mysterious fish. According to Messrs. Jordan and Evermann, "the matter of spawning is probably similar for all the species, but we have no data for any except the quinnat and the redfish. In these species the fishes pair off; the male with tail and snout, excavates a broad, shallow 'nest' in the gravelly bed of the stream in rapid water, at a depth of one to four feet; the female deposits her eggs in it, and after the exclusion of the milt, they cover them with stones and gravel. They then float down the stream tail foremost. As already said, a great majority of them die. In the head waters of the streams, unquestionably all die; and we now believe *all* die after once spawning, regardless of where the spawning beds may be." Last September we had an opportunity of seeing the redfish, or as we Canadians call them, the sockeye, spawning. The performance was exactly as described in the foregoing quotation, but the Dominion

officials engaged in collecting their eggs were strongly inclined to the belief that though most of the parent fish die through sheer weakness, that *all* do not. Out of a hundred thousand fish, perhaps, ninety-nine thousand will weigh between certain extreme weights as for instance, between four and seven pounds; a small percentage will weigh almost twice as much, and once or so in the season, gigantic salmon, comparatively speaking, will be noticed. The Dominion Fisheries officers surmise that the smaller fish are four-year-olds making their first ascent from the sea; that the larger fish are eight years old, and are returning to the head waters where they were hatched, for a second time; and that the monsters are twelve-year-old fish that have survived the trials of twice stemming the turbulent streams of British Columbia.

The condition of some of these spawning fish was awful. One male had his head almost severed in half; many of them had fins and tails worn to their bases; great sores, the result of fierce encounters between the males, made some of them hideous to look upon; and one female fish was actually intent upon reproducing her species, although her whole head, from a point just in front of the eye, was missing.

Speaking of the peculiar variation in color of the flesh of the quinnat, mention is made of the white-meated fish so common in the Fraser in the autumn, and it is indeed strange that fish, not to be distinguished, superficially, should differ so much from one another in the color of their flesh. In the month of May, fishing in the sound off Fort Wrangel, Alaska, we caught as many white-fleshed, or streaky-fleshed fish as we did red, but when served one was as good as the other.

It is, unfortunately, quite impossible in a brief review, such as ours must necessarily be, to do justice to this monumental work, and, in conclusion, we will only say to our readers that if they are fishermen they cannot invest four dollars to better advantage than in buying it.

The Collie Club of America, at a meeting to be held shortly in Philadelphia, is to take into consideration a pro-

position to hold a show of collies in 1903, thereafter to be an annual fixture. In all probability the proposal will carry, and we have no doubt that under the Club's powerful influence there will be a gathering of this favorite breed from all parts of the States and Canada such as could not be brought together under any other auspices. The Club has several very valuable challenge cups under its control, the award of which carries a medal to commemorate the win, and it is the ambition of every collie breeder to possess one of these.

A wonderful inland sea is Lake Superior! What would an inhabitant of Central Europe think, could he be placed on a 3,600 ton steamer, in a gale of wind, on our big Canadian-American lake? He would see the great seas come out of the wrack and mist, and strike against the strong bows like a sledge hammer striking upon an anvil, and would feel the good ship tremble, notwithstanding her strength, as the green water rushed aft along the decks before making its escape through the hawse pipes. No land in sight, as likely as not no sister ship, nothing but the heaving, ice-cold waters of the great lake, and the wheeling, crying gulls and terns. This is Lake Superior in an angry mood, but, happily, in summer the inland sea is more often placid than raging. The surface is, perhaps, so calm that the rising fish makes a ring that may be seen from afar; the smoke from the funnel stretches away into the dim distance, until it merges into the purple haze of the sunset. But see Superior in whatever mood you will, it is always grand, beautiful, alluring, and to sail on its broad bosom once is to create a strong desire to revisit it.

Mr. E. Stewart, Dominion Superintendent of Forestry, has returned from an extended trip through the northern part of Alberta and Athabasca, which was undertaken in order to ascertain the extent of the timber in that direction and what steps might be necessary for its protection. Much valuable timber was found along the Mackenzie and Peace Rivers, the poplars there especially reaching a great size. The Aspen poplar was found reaching in clear straight

trunks to a height of seventy-five or eighty feet. One thing particularly noticeable was the thorough manner in which the distribution of the notices of warning in regard to the setting out of fires had been done by the Mounted Police and the officers of the Hudson's Bay Company, by whom it had been kindly undertaken in the districts where there are at present no forest rangers. These notices were found all along the routes of travel in the northern districts.

Mr. Stewart considers the Peace River district specially suited for agricultural purposes and exhibits some very fine specimens of wheat grown at Lesser Slave Lake.

The annual general meeting of the Montreal Canine Association was held in the Natural History Rooms, on the 13th November. Owing partly to very inclement weather, and also to the fact that a considerable number of the shareholders were disqualified from vot-

ing through the non-payment of the yearly assessment of two dollars, there was a comparatively small attendance. The treasurer's report, duly audited, showed a balance on the right side of something over \$280 in cash and assets valued at \$700. A new constitution and by-laws was adopted, after which the meeting proceeded to the election of officers, with the following result: Hon. Patrons—The Governor-General of Canada, Lord Strathcona and Mount Royal, His Worship the Mayor of Montreal; Hon. President—S. Coulson, Esq.; Hon. Vice-Presidents—Dr. Mignault, J. G. Kent, Esq. (Toronto), Dr. Chas. McEachran; President—Mr. D.W. Ogilvie; Vice-President—Mr. Jos. A. Laurin; 2nd Vice-President—Mr. Joseph Reid; Treasurer—Mr. F. Stuart; Secretary—Mr. J. R. Innes; Executive Committee—Messrs. N. C. Ogilvie, H. M. Walters, D. Robertson, John A. Pitt, Alf. Brittain, H. L. Thomas, W. Henry, S. Britcher, H. A. Christmas, A. F. Gault.

CONTENTS

December, 1902

Hatching and Planting Trout. By Prof. Edward E. Prince	235
Bruno the Hunter. By William Henry Drummond	242
Shadows 'Neath Bare Boughs. By H. McB. Johnston	245
Camping in Canada. By David T. Abercrombie	247
Moose in Canada. By Joseph J. de Long	250
Chats About Driving. By "Meadowbrook"	257
Why Partridge are Scarce. By Abel Johnson	261
The Black Walnut.	262
Draudt's Method. By A. Knechtel, F.N.Y.S.F.F. & G.C.	266
Our Medicine Bag.	268

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.

Canadian Forestry Association



Patron :

HIS EXCELLENCY THE GOVERNOR-GENERAL.

Honorary President :

HIS HONOUR S.R. HENRI JOLY DE LOTBINIÈRE, Victoria, B.C.

President :

WILLIAM LITTLE, Westmount, P.Q.

Secretary :

E. STEWART, Ottawa, Ont.

Assistant Secretary and Treasurer :

R. H. CAMPBELL, Ottawa, Ont.

Vice-Presidents :

HIRAM ROBINSON, Ottawa, Ont.

HON. SIR LOUIS DAVIES, Ottawa, Ont.

A. H. MCKAY, LL.D., Halifax, N.S.

HIS HONOUR J. B. SNOWBALL, Fredericton, N.B.

HON. S. N. PARENT, Quebec, P.Q.

J. B. McWILLIAMS, Peterborough, Ont.

MAJOR STEWART MULVEY, Winnipeg, Man.

LT.-GOVERNOR OF MANITOBA, Winnipeg, Man.

J. S. DENNIS, Regina, Assa.

J. G. LAURIE, Battleford, Sask.

WM. PEARCE, Calgary, Alta.

F. D. WILSON, Ft. Vermilion, Atha.

H. BOSTOCK, Ducks, B.C.

Board of Directors :

C. JACKSON-BOOTH, Ottawa, Ont.

W. C. EDWARDS, M.P., Rockland, Ont.

C. E. E. USSHER, Montreal, P.Q.

PROF. JOHN MACOUN, Ottawa, Ont.

THOS. SOUTHWORTH, Toronto, Ont.

E. G. JOLY DE LOTBINIÈRE, Quebec, P.Q.

WM. SAUNDERS, LL.D., 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-forestation 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,

OTTAWA, ONT.

Department of the Interior.



Result of a Single Shot from a .303 SAVAGE Expanding Bullet.

KEEP UP WITH THE TIMES

DO NOT BUY A RIFLE UNTIL YOU HAVE EXAMINED INTO THE MERITS OF THE . . .

Savage

—WHICH IS THE—

20th CENTURY ARM

Only Hammerless Repeating Rifle in the World. Absolutely Safe, Strongest Shooter, Flattest Trajectory, Highest Development of Sporting Rifles. Constructed to Shoot Six Different Cartridges. Adapted for large and small game. .303 and 30-30 calibers. Every Rifle thoroughly guaranteed.

Send for
Circulars

Write for new
Catalog (32)

Savage Arms Company

Utica, N.Y., U.S.A.

Manufacturers of Savage Magazine and Magnetic Hammers

NEVER LOSE A FISH

THE BEST FISH HOOK ON EARTH

FISHING MADE EASY

By Their Device, Fishermen Make Easy
POOR FISHING EASY



1-0-15c
2-0-18c
3-0-20c
Or one of
each for
45c

one can afford to fish without one. No SPRINGS to get out of order. It is simple and strong; being a LEVER, the harder a fish pulls the stronger it will hold him. It is easily adjusted to all kinds of fishing by sliding the little clamp on the rod. Made in three sizes.

Ask your dealer for the GREER LEVER HOOKS. If you cannot get them they will be sent direct on receipt of price. Send postal note or two cent stamps.

GREER LEVER FISH HOOK CO. ATLANTA, GA.

for Sea, Lake and River fishing. No losing bait. No coming home without your largest fish. No breaking loose or tearing out. No

METZ & SCHLOERB 104 Main Street Oshkosh, Wis.

Genuine MOOSE HIDE MOCCASINS and Slippers
—Gentlemen's, price, \$2.75; Ladies' and Boys', price, \$2.25. Handmade Waterproof OIL TAN PACS (Moccasins), 10 inches high, price, \$3.50.

MARBLE'S Specialties for Sportsmen

Are made on honor and give satisfaction.

For sale by all dealers or prepaid direct from factory on receipt of price.

Write for Folder U. You will be interested in our new inventions.

MARBLE SAFETY AXE CO.
GLADSTONE, MICH.

WATERPROOF MATCH BOX 50 CENTS TO
IDEAL HUNTING KNIFE 2.00 - 3.00
SAFETY AXE 1.00
AUTOMATIC GAIT 1.50 - 2.00
COMPASS-BRACKET 1.00 - 1.50

Caribou Hunting

THE season for big game hunting is almost over, though you have not been able to profit by it owing to the numerous demands upon your time; nevertheless, you are reluctant to let the year go by without firing a shot at game out of the new rifle. Well, there is time yet, for in most of the Canadian provinces caribou are lawful game until the middle or end of December, and the best time to hunt them is while the snow is yet so shoal that snowshoes are not required.

Take with you a good modern rifle—for the shots on the barrens are sometimes long ones,—plenty of heavy, warm clothing, and a sufficiency of currency to pay your way, and if you are a dyed-in-the-wool sports-man there is a good time ahead.



A Caribou Hunter's Camp.

OPEN SEASONS FOR CARIBOU



NOVA SCOTIA, September 15th to January 1st.

NEW BRUNSWICK, September 15th to December 31st.

QUEBEC, September 1st to January 31st.

NORTH-WEST TERRITORIES, November 2nd to December 14th.

BRITISH COLUMBIA, September 1st to December 31st.

FOR FURTHER INFORMATION WRITE TO ANY OFFICER OR AGENT OF THE

Canadian Pacific Railway

OR TO THE GENERAL PASSENGER DEPARTMENT, MONTREAL, QUE.

STEVENS



DUCK SHOOTING is great sport and now is the season for it. Many sportsmen will go into the woods and as the laws are off nothing can prevent a successful trip, unless it be an *unreliable* Firearm. We make the *Reliable* kind, and have

RIFLES from \$3.00 to \$150.00
 PISTOLS from \$2.50 to \$50.00
 SHOTGUNS from \$7.50 to \$25.00

Every gunner should carry our *Rifled Bullet Shell*, which makes a Rifle out of any Gun.

All sporting Goods dealers handle our Arms.

FREE A copy of our New Catalogue, containing valuable information, will be mailed to any address.

J. Stevens Arms and Tool Co., 365 Main Street
 CHICOPEE FALLS, MASS.

Ammunition

FOR RIFLE

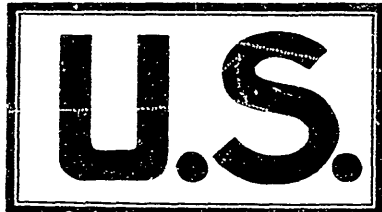


SUPERIOR IN QUALITY FOR
 SERVICE, HUNTING AND
 TARGET PRACTICE

REVOLVER



Its Mark



AND GUN



MANUFACTURED BY

United States Cartridge Co.

Agencies (121 Worth Street, New York
 114-116 Market St., San Francisco, Cal.

LOWELL, MASS., U.S.A.