Sheen will tarnish, honey cloy,
And merry is only a mask of sad,
But, sober on a fund of joy,
The woods at heart are glad.
The black ducks mounting from the lake.
The pigeon in the pines,
The bittern's boom, a desert make
Which no false art refines.

EMERSON: *Waldeinsamkeit.*

ROUGH WATER—LAKE TEMAGAMI

(From the painting by Philip R. Goodwin)

The Camper's Own Book

A Handy Volume for Devotees of Tent and Trail

With Contributions by

Stewart Edward White
Tarleton Bean
Edward Breck
George Gladden
Charles Bradford
Ernest Ingersoll
F. C. Selous
J. Horace McFarland
A. K. P. Harvey
Henry Oldys
J. W. Elwood
Frank A. Bates

and Other Authorities

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New York
THE LOG CABIN PRESS
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Preface

This handbook makes no pretense of exhaustiveness. It seeks only to present in an authoritative way some of the more important phases of camping and camp life. The articles are by our standard writers on such subjects. To them the editor gives all credit for whatsoever success the book may achieve; and to them he returns his best thanks for their courtesy and help. On many of the topics treated there are bound to be differences of opinion; for these things are sources of debate around summer camp-fires and winter hearths. Knowing, however, that the book will come into the hands of not a few beginners, the editor has sought to eliminate anything that might mislead or misinform.

Special thanks must be returned to the following for their interest and good-fellowship in placing at our disposal their contributions: Mr. Stewart Edward White, Mr. Edward Breck, Mr. Ernest Ingersoll, Mr. C. B. Bradford, Mr. F. A. Bates, Mr. A. K. P. Harvey, Mr. J. Horace McFarland, Mr. J. W. Elwood, and Mr. Rudolf Cronau. All material by them that appears in this volume is cov-

ered by special copyright and cannot be used without express permission of the author. Mr. J. A. McGuire, of "Outdoor Life," also kindly consented to the use of portions of articles that had previously appeared in that publication. We desire also to acknowledge the courtesy of Mr. H. W. Henshaw, Chief of the Bureau of Biological Survey, for permission to republish the article by Mr. Oldys on "The Game Market of To-day." Particular gratitude is due Mr. George Gladden, who has not only contributed two excellent articles—one of them on a hitherto neglected subject—but has given an expert reading to all the proofs and made numerous helpful suggestions.

By his permission, we are enabled to reproduce for the first time a recent painting by Mr. Philip R. Goodwin, one of the leading American artists in this field. Several other attractive and apposite illustrations (from photographs) are scattered through the volume.

G. S. B.

Prologue

The Benefits of Recreation

THE custom of taking outing and pleasure-excursions is becoming more general each year. As the summer approaches we long to desert the dusty pavements and the confines of store or office, and wander, in delightful abandon, through the shady woods, to escape for a fortnight from the worry and care of exacting routine and be a child again—a child of Nature.

I have said that the vacation custom is spreading, but I must qualify this statement; there yet remain many who plead lack of time, and continue the monotonous grind despite all remonstrance of body and brain. There are men so constituted that they seem to endure any amount of indoor work and retain health; but, in time, this too strenuous application

tells on all according to the strength of their respective constitutions.

It is difficult to understand how some men of excellent business ability and good judgment generally, can hold such erroneous views on economy of time. The grand old statesman, Gladstone, was never known to waste time; yet it was he who said, "All time and money spent in training the body pays a larger interest than any other investment."

Variety has been called the spice of life, but it is more; it is so essential that happiness cannot long exist without it; and since happiness and a lively interest in our work are parts of the equipment for success, it behooves us to avoid monotony. A well-regulated life must include some provisions for wholesome diversion.

Artificiality is all too apparent in present modes of life; we have strayed a long way from Nature in habits, dress, and food, and have suffered in consequence; but when we refuse to heed her last warning, given through our instinct to relax occasionally, then, indeed, are we on the danger-line.

Hardly less indiscreet is the man who begrudges every hour spent in recuperation, than he who neglects it altogether. You cannot expect to derive much benefit from your trip if you constantly worry about home affairs and allow yourself to think that you will never catch up with your work. Determine to forget everything but health and pleasure, and enjoy the trip to the fullest extent.

L. E. Eubanks.

The Camp-Fire

BY
WILLIAM C. GRAY
Late Editor of "The Interior"

THERE is an impalpable, invisible, softly-stepping delight in the camp-fire which escapes analysis. Enumerate all its charms, and still there is something not in your catalogue. There are paths of light which it cuts through the darkness; there are elfish forms winking and twisting their faces in the glowing, ash-veiled embers; there are black dragons' heads with red eyes, and jaws grinning to show their fiery teeth; the pines whisper to the silence; the sentinel trees seem to advance and retire; you may hear the distant scream of the wolf, or the trumpet of the moose, or the note of a solitary night bird, or the more familiar note of the loon. All these

surround and conceal some other delight, as the body veils while it reveals the soul.

Our birth is a sleep and a forgetting, and yet a remembering. It is the memory of the wide, wide world that has come down to us in our blood, and of the camp-fire of our tribal ancestors, and of their and our original ancestor who built his camp-fire under the trees of the garden, eastward in Eden. Sitting in its glow we are home again, though we know it not, nor can tell whence cometh the delight. It is rest and freedom from care. The sheltering trees look down upon us with calm pleasure, and soothe us to sleep with their whispered lullaby—a song which the mother yet sings to the baby cradled upon her breast, without knowing who composed it or whence it came. . . .

There was a rush for home, a tumbling together, and away we flew, two hundred and fifty miles due north, the last dozen of it in a caboose of an iron-ore train, which slacked up for us far out in the trackless forest. The tumbling Brulé in front, the charming Chicagoan Lake back of us in the woods, a spring of the sweetest, coldest water at the root of an old hemlock; pines, birches, cedars, maples, all around. The first question that is asked me at home is, "How about the mosquitoes?"—a question which displays ignorance of this high-spirited siren. She is a stickler for etiquette. She demands precedence in the procession and attention to her music. She bites you because you invade her urban temples before she has finished her oratorios. You must wait till she has concluded her outing, sung her last madrigal,

and gone over to bite the angels. There is nothing mean about her. She does not, like her human counterpart at Newport or Saratoga, seek to monopolize everything. She leaves all her possessions to you for the most delightful months of the year, August, September, and October.

"Charlie's" ax is ringing, and down comes a hemlock. What's that for? Your bed, of course. The tent is spread. The corner selected for sleeping is piled with hemlock twigs, and a sweeter bed, or one more springy, is not to be had for love or money. First a rubber blanket, then a sheet, and then a woolen blanket, and sleep needs no wooing.

Everything here that is found is in unbounded opulence. Amid thousands of square miles of virgin forests, and with good axes in hand, why should we not have imperial camp-fires? The knack of the axman, when acquired in boyhood, is never lost. The blow that will go deepest and throw out the encumbering chip is an achievement of high art. And such fires as rewarded a half-hour's labor! The logs, cut from twelve to fifteen feet long, and piled high, have the promise and potency of three splendid fires, one, and the first, from the middle portion, and one more to be taken as required from each end. Three cords of good wood for an evening is no waste, and the air is cold enough to make the heat as agreeable as the flame is inspiring. While no desolation is so sad as a fire-swept forest or city, yet the destructive agent is the source and the revealer of all material beauty and glory. Nothing that was known to primitive men was so worthy an object of worship.

It awakens a sense of dangerous power like the lion; of lithe beauty like the leopard; of whelming mastery like the flood. . . . .

The campers in these solitudes are not solitary. In the daytime the trees are trees. Very beautifully and loftily the spires of pine and hemlock rise out of the valley, and the birch and maple overshadow us, but they are only trees. At night, when the torch is applied to the wealth of accumulated fuel, they are trees no longer. They leave their places and come out of the darkness to join our company. They say not a word, and yet not even to man is given such a variety of character and so much of the mystery of the spiritual world. We catch the thought of that white and stately birch—calmness, purity, and dignity. And so of that mighty pine, somber and lofty. This rustling maple is an old friend. We understand him. He is no mystic, no poet. He talks about sweetness, shade, and beauty—familiar topics.

"Horse Sense" in the Woods

By
Stewart Edward White
Author of "The Forest," "The Mountains," "Arizona Nights," etc.

THERE is more danger that a man take too much than too little into the wilderness. No matter how good his intentions may be, how conscientiously he may follow advice, or how carefully he may examine and re-examine his equipment, he will surely find that he is carrying a great many pounds more than his companions, the professionals at the business. At first this may affect him but little. He argues that he is constructed on a different pattern from these men, that his training and education are such as to have developed in him needs and habits such as they have never known. Preconceived notions, especially when one is fairly brought up in their influence, are most difficult to shake off. Since we have worn coats all our lives, we include a coat in our list of personal apparel just

as unquestionably—even as unthinkingly—as we should include in our calculations air to breathe and water to drink. The coat is an institution so absolutely one of man's invariable garments that it never even occurs to him to examine into its use or uselessness. In like manner no city-dweller brought up in proximity to laundries and of the firm belief that washing should be done all at once and at stated intervals can be convinced that he can keep clean and happy with but one shirt; or that more than one handkerchief is a superfluity.

Yet in time, if he is a woodsman, and really thinks about such affairs instead of taking them for granted, he will inevitably gravitate toward the correct view of these things. Some day he will wake up to the fact that he never wears a coat when working or traveling; that about camp his sweater is more comfortable; and that in sober fact he uses that rather bulky garment as little as any article in his outfit. So he leaves it home, and is by so much disencumbered. In a similar manner he will realize that with the aid of cold-water soap the shirt he wears may be washed in one half-hour and dried in the next. Meanwhile he dons his sweater. A handkerchief is laundered complete in a quarter of an hour. Why carry extras, then, merely from a recollection of full bureau-drawers?

In this matter it is exceedingly difficult to be honest with oneself. The best test is that of experience. What I have found to be of no use to me may measure the difference between comfort and unhappiness to another man. Carry only essentials: but the definition of the word is not so easy. *An essential*

is that which, by each man's individual experience, he has found he cannot do without.

How to determine that? When you have reached home after your trip, turn your duffle-bag upside down on the floor. Separate the contents into three piles. Let pile No. 1 include those articles you have used every day—or nearly that often; let pile No. 2 comprise those you have used but once; and pile No. 3 those you have not used at all. Now, no matter how your heart may yearn over the Patent Dingbat in No. 3, shut your eyes and resolutely discard the latter two piles.

Naturally, if you are strong-minded, pile No. 1 will be a synonym for your equipment. As a matter of fact, you will probably not be as strong-minded as that. You will argue to yourself somewhat in this fashion:

"Yes, that is all very well; but it was only a matter of sheer chance that the Patent Dingbat is not in pile No. 1. To be sure, I did not use it on this particular trip; but in other conditions I might need it every day."

So you take it, and keep on taking it, and once in a great while you use it. Then some day you wake up to two more bits of camp philosophy, which you formulate to yourself about as follows: *An article must pay in convenience or comfort for the trouble of its transportation; and substitution, even imperfect, is better than the carrying of special conveniences.* Then he hurls said Patent Dingbat into the nearest pool.

That hits directly at the weal point of the sporting catalogues. Every once in a while an enthusiast

writes me of some new and handy kink he is ready to swear by. It is indeed handy, and if one could pluck it from the nearest bush when occasion for its use arose, it would be a joy and a delight. But carrying it four hundred miles to that occasion for its use is a very different matter. The sporting catalogues are full of very handy kinks. They are good to fool with, and think about, and plan over in the off season; but when you pack your duffle-bag you'd better put them on a shelf.

Occasionally, but mighty seldom, you will find that something you need very much has gone into pile No. 3. Make a note of it. But do not be too hasty to write it down as part of your permanent equipment.

The first summer I spent in the Sierras I discovered that small noon showers needed neither tent nor slicker. So next year I left them home, and was, off and on, plenty wet and cold. Immediately I jumped to the conclusion that I had made a mistake. It has not rained since. So I decided that sporadic heavy rains do not justify the transportation of two cumbersome articles. Now, when it rains in daytime I don't mind getting a little wet—for it is soon over; and at night an adequate shelter can be built of the tarpaulin and a saddle blanket. In other words, the waterproofs could not pay, in the course of, say, three days' rain in a summer, for the trouble of their transportation during four months.

As I have said, the average man, with the best intentions, will not go too light, and so I have laid especial emphasis on the necessity of discarding the unessential. But there exists a smaller class who rush to the opposite extreme.

We all know the type. He professes an inordinate scorn for comfort of all sorts. If you are out with him, you soon discover that he has a vast pride in being able to sleep on cobblestones—and does so, at the edge of yellow pines with their long needles. He eats badly-cooked food. He stands—or perhaps I should say poses—indifferent to a downpour, when everyone else has sought shelter. In a cold climate he brings a single thin blanket. His slogan seems to be: "This is good enough for me!" With the unspoken conclusion: "If it isn't good enough for you fellows, you're pretty soft."

The queer part of it is he usually manages to bully sensible men into his point of view. They accept his bleak camps and voluntary hardships because they are ashamed to be less tough than he is. And in town they are abashed before him when, with a superior, good-natured, and tolerant laugh, he tells the company in glee of how you brought with you a little pillow-case to stuff with moss. "Bootleg is good enough for me!" he cries. And every one marvels at his woodmanship.

As a plain matter of fact, this man is the worst of two types of tenderfoot. The greenhorn does not know better, but this man should. He has mistaken utterly the problem of the wilderness. The wild life is not to test how much the human frame can endure—although that often enough happens—but to test how well the human wits, backed by an enduring body, can answer the question of comfort. Comfort means minimum equipment; comfort means bodily ease. The task is to balance, to reconcile these apparently opposing ideas.

A man is skillful at woodcraft just in proportion as he approaches this balance. Knowing the wilderness, he can be comfortable when a less experienced man would endure hardships. Conversely, if a man endures hardships where a woodsman could be comfortable, it argues not his toughness, but his ignorance or foolishness, which is exactly the case with our blatant friend of the drawing-room reputation.

Probably no men endure more hardships than do those whose professions call them out of doors. But they are unavoidable hardships. The cowboy travels with a tin cup and a slicker; the cruiser with a twenty-pound pack; the prospector with a half-blanket and a sack of pilot bread—when he has to. But on round-up, when the chuck wagon goes along, the cow-puncher has his "roll"; on drive with the wagon, the cruiser sends his ample "turkey," and the prospector with a burro train takes plenty to keep him comfortable. Surely even the Tough Youth could hardly accuse these men of being "soft."

You must in this matter consider what your means of transportation are to be. It would be as foolish to confine your outfit for pack-horses to the equipment you would carry on your own back in the forests as it would be to limit yourself to a pack-horse outfit when traveling across the country in a Pullman car. When you have a horse it is good to carry a few—a very few—canned goods. The corners of the kyacks will accommodate them; and once in a blue moon a single item of luxury chirps you up wonderfully and gives you quite a new outlook on life. So you chuck them in, and are no more bothered by them until the psychological moment.

On a walking trip, however, the affair is different. You can take canned goods, if you want to. But their transportation would require another Indian; another Indian means more grub and more equipment; and so at the last you find yourself at the head of an unwieldy caravan. You find it much pleasanter to cut the canned goods, and to strike out with a single companion.

After all, it is an affair of common sense; but even common sense, when confronted by a new problem, needs a certain directing. I do not claim that my way is the only way, nor am I rash enough to claim it is the best way. But it is my way, and if anyone will follow it he will be as comfortable and as well suited as I am, which is at least better than going it blind.

Comfort in Camp

By
Frank A. Bates ("Matasiso")
Author of "Game Birds of North America," etc.

THE first night that you are in camp will probably be destitute of many of the conveniences, for you seldom get well settled. About all that is really necessary is to get the beds well established and a light supper prepared.

The next day get all the camp luxuries fixed. Make some hooks on the trunks of the nearest trees to hang the odds and ends on. These may be nails, or they may be forked twigs pinned to the wood. Sort out the provisions and put them where they will keep sweet and dry.† Do not lay the pork on the sugar bag, nor the salt against anything else.

The beds are of prime necessity. If you must economize on anything, let it not be on the bedding. If you are where you can get plenty of fir or spruce

†An expert states that meat hung 25 or 30 feet from the ground is always safe from blow-flies, "which," says he, "apparently never rise to that height." Such an arrangement may not, however, always be convenient.—Ed.

boughs, you have the finest bed in the world. Cut a large supply and spread it over the sleeping place. Start with the larger pieces and lay a row along the head of the bunking-place. Then work toward the foot, lapping them like shingles, till the bed is at least seven feet long. Next start again at the head and put on another layer, forcing the butts down into the first layer. Continue this process, using smaller branches with each layer, and finishing off with the fine tips on top. Make this bed as thick as you can, for it will settle with use. When you have nothing else to do, put some more fir-tips on the top. Lay the rubber blankets on this mattress, and make up each man's blanket separately, so that he can easily crawl into it and cover up without disturbing the others.

If fir "browse" is scarce or absent, make a pole bed. Cut four sticks with a crotch at one end. These sticks should be at least three inches in diameter. Force them into the ground so that the head and foot of the bed will be about seven feet apart; and have them so placed that poles, also not less than three inches in diameter, may be laid in the crotches across the head and foot. Across the poles lay other smaller ones close together till the frame is wide enough to accommodate the party. On this foundation lay the brush or dry leaves.

When nothing else is available, and I am in a camp that is to be permanent, I generally buy a bale of cheap hay if I can get it. There is sometimes a farmer who can supply it, or it can be obtained at the point of disembarkation and brought in with the luggage. This may seem fussy, but I am supposed to be writ-

ing in part for the benefit of people who are accustomed to soft beds, and who come to camp to enjoy themselves. If you wish to "rough it," spread your blanket for one night on the ground beneath the starry sky. The next night you will have a bed made.

A convenient bed is made of a strip of canvas 6½ feet square, doubled and sewn together at the sides, with the ends open. When you put it up, drive four crotched sticks into the ground at the four corners and stretch the canvas on poles placed on the crotches.

The next important adjuncts are the fires. It may seem almost superfluous to tell a man how to build a fire; but "It takes a wise man or a fool to make a good fire," is an old saying. I take it the reader classes himself as neither. The cooking-fire will be the most important. If you have flat stones, lay up a fireplace, placing the stones close enough together so that the fire will play all around the kettle, and with space enough for the hanging of two pots. It is a good idea to have a low place in front wide enough to set the fry-pan on the coals. This will save your holding the pan in your hand all the time you are using it.

If you are in a permanent camp where there are plenty of rocks, build a pier of stones about three feet high, leaving a hollow in the centre for a fireplace, which may have a bottom of turf. This device will save a good many back-aches. Make the fireplace at the back a little narrower than the fry-pan, and wider at the front. On this you may boil your potatoes, make your coffee, and fry your fish at the

same time. The rocks will hold the heat, and food may be kept warm while waiting if care is taken to have the stones on the top flat and level; in fact, I have often stewed fruit, etc., with the dish resting on the edge of the fireplace.

In temporary camp, cut three logs, about a foot in diameter; lay one for a back-log, two for side-logs; build your fire on top with small stuff, and when it falls in coals you have a convenient place to set your fry-pan, coffee-pot, etc. Remember that a small fire is better than a large one. With a large one you cook your face more than your food, and there is more liability of spoiling the cooking.

Hard wood is better than pine or spruce. The coals are what you want, and the longer they remain hot the better for the cook. By no means use hemlock or cedar, as the sparks fly all over everything, burning the towels and the cook, soiling the food, and setting fire to the surrounding dry leaves.

Although I prefer "fry-pan bread," I want an oven in which to bake beans, fish, etc., and construct it as follows: Dig a hole in the ground, preferably on the side of a knoll; line it with rocks, if possible; build a fire of hard wood within it and keep up the fire for a half hour at least, till the rocks or the surrounding earth is very hot; then rake out the coals and ashes, leaving from three to four inches of live coals and ash in the bottom. Put in whatever you have to bake and cover it with the ashes. The length of this operation will depend upon so many conditions that it will be impossible to set a time, but a little experience will soon settle the question.

The evening camp-fire is a great comfort, and is

an altogether different proposition. Select a place in front of the tent, but not too near it, and place a big log (or pile up several smaller ones with stakes to hold them in place) for a back-log. Build the fire in front of it. Start the bottom with fine, dry chips, branches, or shavings; place larger dry branches on these, and top off with good-sized pieces. After the fire is well alight, it will consume damp or even green wood. The back-log will reflect the heat into the tent, and will hold the fire for a long time.

Suppose that you wake in the morning with a steady rain pouring down. Do not try to make a shift with cold grub. That is the time you need a warm meal. Put your rubber blanket over your shoulders and go out. If you are wise, you will have prepared a store of dry, soft wood, which will be stored in the tent; but if you have used up your supply, or have neglected this precaution, hunt up a pine log or dead pine tree, and chop off the outside. Inside you will find plenty of dry wood. Rake open the ashes in the camp-fire, where you will probably find plenty of live coals; put on your dry chips; cover with pine, fir, or spruce boughs; blow up the fire; and you will soon have heat enough to keep the tent dry, and coals enough to cook by. It will take a pretty hard rain to put out a good fire if once under headway.

If there are any mosquitoes, fasten the netting over the opening of the tent. Hardwood splinters will do the trick. Keep this netting in place as much as possible. It is much easier to keep these pests out than to get them out afterwards. If they are too troublesome, use insect repellent freely. There are

numerous preparations which can be purchased ready-made. Most of them answer the purpose very well. But if you wish to make your own, the following recipe, furnished me by Dr. L. O. Howard, the United States entomologist, is easily mixed and very good: Two oz. oil of citronella, two oz. camphor, one oz. oil of cedar. The recipe furnished by "Nessmuk," one of the best old sportsmen that the country ever knew, is as follows: Pine tar, three oz.: castor oil, two oz.; oil pennyroyal, one oz. Simmer the tar and castor oil together; when these are well amalgamated, add the oil of pennyroyal, and set to cool. It is well not to have the mixture too warm when the pennyroyal is added, because the pennyroyal, the real life of the mixture, may evaporate. Bottle and cork tightly. Use copiously and you will have no trouble with the pests of the woods. This mixture is equally efficacious for black-flies, mosquitoes, or horse-flies, and will do no injury to the skin. Please wash your hands, however, before you mix the bread.

Outfits

THE manner of outfit is widely debated and must be decided upon for any given individual or party after experience and experiment. In an article in "Outing," Dillon Wallace, the well-known expert, had this to say: "It is not necessary to enjoyment and comfort that one be provided with large or expensive outfit. I have always found the simplest the best. Too much of the paraphernalia of civilization robs a camp of much of its charm. No small part of the pleasure of camping is derived from the necessity to improvise.

"As an adequate outfit for two I would suggest the following:

General:

A waterproof tent, 7¼x7¼, with sod-cloth	$8.00
Rope for pitching tent and general use	.50
Waterproof ground-cloths for tent-floor	3.75
1 ¾ axe	1.00
Stone for sharpening axe and knives	.25

Soap, towels, and matches.

"I would recommend having the tent-front fitted with mosquito-netting. The outfitter where the tent is purchased will do this, or it may easily be done at home."

To this he added as follows:

Cooking and Kitchen Utensils:

2 3-quart kettles.
1 2-quart kettle for coffee-pot.
1 fry-pan.
1 large pan for mixing and for dish-pan.
1 wash-basin.
1 large stirring-spoon.
4 small spoons.
3 cups.
Knives and forks.
1 small butcher-knife.

"An aluminum folding baker," he continued, "will be found a great convenience. These are worth about $3.50. With but little experimenting one can roast and bake very well, however, before an open fire. Aluminum pots, kettles, cups, spoons, etc., will not tarnish, are very light, and last indefinitely; but are rather expensive. Where weight is not to be especially considered, ordinary enamel-ware will answer just as well, however, and the cost is inconsiderable."

Wallace further recommended for each camper:

A pair of gray wool blankets of good quality.
Light-weight woolen underclothing.
A blue or gray flannel shirt.
A pair of old trousers.
A sweater or old coat.
Stout footwear.

We also present, immediately following, a list that has been carefully compiled for two persons for two weeks of canoe travel. This list is the result of several years of experiment and elimination. The grub-list is to be supplemented by fish.

In Grip

(Carried by individual on railway journey.)

Nightclothes	Extra suit underwear
3 collars	Tie
Shirt	4 handkerchiefs
1 pair extra socks	Shaving-kit
Hair-brush and comb	Clothes-brush

Clothes, Etc.

(Shipped in trunk, with exception of watch, money, and tooth-brush.)

Worn or carried on person in woods:

Hat	Kerchief
Flannel shirt	Suit underwear
Trousers	Belt
Socks	Watch
Shoes	(Pouch)
Compass	Knife
Pencil	Memo. book
Match-box	Handkerchief
Money	(Pipe)

Extra for personal use in woods:

Moccasins	2 pairs socks
Underwear (1 suit)	Sweater
Tooth-brush	Comb
	Handkerchief

General Outfit

(Shipped in trunk, with exception of camera and a few film-rolls.)

Tent	Tent-poles
Bed	Blankets
Knapsack	Revolver, cleaner, and oil
Cartridges	
Fishing-tackle	Landing-net
Grub-bags	Tump
Ax	Lantern
12 candles	Rope
Twine	Medicines, bandages, gauze, etc.
Soap	
Whetstone	Sponge
Pneumatic carrier	Camera
Films	Maps
3 towels	Books
Tooth-paste	Drinking-cup
Mosquito "dope"	Glass jars (in which Dehydro products are put to soak)
Toilet-paper	
Pack-basket	

Cooking Outfit

(Shipped in trunk.)

Aluminum kit	Salt and pepper cellars
Strainer	Can-opener
Swab	Knife
Cake-turner	Dish-towels

Reflector

Grub-List

(Partly shipped in trunk, partly purchased at point of embarkation.)

Bacon, 10 lbs.	Flour, 10 lbs.

Corn meal, 2 lbs.
Erbswurst
Sugar, 5 lbs.
Butter, 1 lb.
Salt
Curry
Matches
Soup greens*
Tomato soup*
Cheese
Canned tomatoes, 2 cans
Strawberry jam, 1 jar
Orange marmalade, 1 jar
Tea, ½ lb.
Cranberries, 1 can*
Prunes, 2 lbs.
Nuts, 2 lbs.
Coffee, ½ lb.
Onions*
Peanut-butter, ½ lb.
Hand Sapolio
Eggs, 1 doz.

Rice, 2 lbs.
Bread
Lard, 1 lb.
Milk-powder, 2 cans
Pepper
Spice
Saxine, 3 bottles
(sugar substitute)
Baking powder, small can
Baked beans, 2 cans
Canned peaches, 1 can
Plum jam, 1 jar
Honey, 1 can
Eating chocolate, 2 lbs.
Apricots, 1 lb.
Currants, 1 lb.
Raisins, 3 lbs.
Potatoes*
Carrots*
(Tobacco)
3 lemons
Tapioca

*Dehydro product.

Suggestions for the Sportsman's Outfit

By
A. K. P. Harvey

Author of "In the Glow of the Camp-Fire"

Clothing and Bedding

IN the selection of clothing, comfort should be the chief consideration. A trip to the woods is no drawing room occasion, but the sportsman should dress in a neat and presentable manner.

A pair of strong, well-made waterproof leather boots, reaching halfway to the knee, can be purchased of any dealer in sporting-goods, and are indispensable. These are sufficient, unless you intend to fish streams; then it is well, also, to have a pair of rubber wading-boots. Light woolen or cotton hose may be used. Full-length trousers or knee breeches made to wear with belt, and of strong, closely-woven fabric, which does not easily tear; a jacket of the same fabric or of corduroy†; shirts of soft material; and a soft hat or cap complete the outfit.

For an extended trip a rubber blanket, to be spread on the ground or on the bough bed, a

†Many object to corduroy, saying that it is not warm; that when wetted it remains damp for a long time; and that for hunting it is too noisy.—Ed.

woolen blanket, and an air-pillow, will add much to your comfort. It is impossible to lay down hard-and-fast rules, and while this outfit answers every purpose, it may be varied to suit the taste and the means of the individual.

Fishing-Tackle

Fishing-tackle need not be expensive: the two essentials to be kept in mind in selecting it are simplicity and excellence. However short the time in which you intend to fish, at least two rods, not costly, but of good quality, are needed—a bait-rod and a fly-rod. The bait-rod, which will answer for stream fishing or for trolling, must be eight feet and a half or nine feet in length, and may be made of split bamboo, lancewood, or (preferably) metal.

Much has been said and written on the subject of fly-rods, some preferring one weighing at least seven ounces and a half, others taking the opposite extreme and advocating one three and a half or four ounces in weight. The latter, however, is valuable only as a novelty, for it is too delicate for good casting, and soon loses its elasticity. The best rod which can possibly be made for general use is of split bamboo, nine feet long, and weighing five ounces and a half or six ounces; it is strong enough to cast a medium-sized line and its elasticity is almost perfect.

The question of reels is especially important. A strong, well-made multiplying reel, with a balanced handle, holding 100 yards of line, is best for successful trolling with a bait-rod. Some prefer a larger one, capable of carrying 200 yards, or even more,

but it is unnecessary; and in ordinary fishing from rowboats or canoes, 200 feet of line is really all that is desirable. In angling successfully for trout or salmon it is essential that the reel be well constructed and run easily. Such a reel will also answer for stream fishing; although for that a small, light reel, carrying 25 yards of line, is preferable. The reel for a fly-rod should be a carefully-selected quadruple multiplier, with a capacity of 75 yards. The best material is aluminum; it is easy-running, and its weight compares well with that of the rod.

Do not try to save money in the purchase of reels. Nothing is more annoying than to lose a good-sized fish when the battle is half fought out because of the imperfect working of a cheap reel.

The line for a bait-rod should be of braided waterproof silk of medium weight, and it should be carefully tested before being wound upon the reel. That for a fly-rod may be of medium or light weight, according to the taste of the user. A medium-weight line casts better, although a light one should be used if the rod weighs less than five ounces.

Gutted hooks should always be used, whether for stream fishing or for trolling. Their size will depend wholly upon the waters you are visiting.

Bait

The subject of flies has been much discussed. Any tackle-dealer will exhibit myriads of fancifully-colored products that put nature to the blush. In the mist of this multitude of white, yellow, rainbow-hued, and strongly-recommended anomalies are four flies of actual value to the sportsman—the Parma-

cheene belle, the brown hackle, the silver doctor, and the Montreal. A Parmacheene belle at the end of a four-foot leader, with the brown hackle in the middle and the silver doctor at the top, is an excellent combination. Now and then the Montreal is preferable to the brown hackle, or, if the day is very light, it may be used in place of the silver doctor; but even this is hardly necessary. When fish will rise to any fly, they will to one of these four; and with these you can take trout in any waters, at any time of day, or on any kind of day, better than with any and all others that have ever been put on the market. This strong statement is verified by an experience of twenty years in the use of this delicate bait, and I desire that the reader be spared the expense and annoyance to which I have been subjected.

Every artificial bait for trolling is made to imitate the minnow; but in this matter, as in everything else, there is nothing equal to the genuine thing. The minnow is the natural food of the trout and the salmon, and, therefore, the best bait that can possibly be used for trolling for large fish. It can almost always be obtained on the grounds or in some neighboring stream, and may be dipped up with a net or caught on a small baited hook.

Worms, or flies baited with worms, are excellent bait for trolling in the smaller lakes. For stream fishing the angle-worm stands first, although in July and August the grasshopper is sometimes preferable. Flies cannot be used to advantage unless the stream is wide, with plenty of clear space overhead for casting.

AFTERNOON—AUGUST

Photograph by Detroit Publishing Co.

ON WHITEFISH BAY, ONTARIO

Suggestions for Hunting-Outfits

(With Special Reference to the Western United States)

By

Townsend Whelen

Grub

IF there is one place above all others where one wants good and appetizing food it is by the camp-fire. Physical exertion and exposure on a hunting trip demand an amount of food which would be almost suicidal to a city business man. I well remember the enormous meals that old Bill Andrews and I used to make away with on some of our long hunts. We sat down one morning to a mess as follows: Two quarts of oat meal, one deer's liver, four bannocks, two quarts of tea and a cup of sugar apiece; and by noon Bill was so hungry that he stopped the pack-train for lunch. I have carefully kept a list of the grub bought at the start, and that remaining at the end, of each of my hunts and have settled on the following list as being perfectly satisfactory not only to myself but to all others with whom I have camped. It is calculated on the basis of one man for one month for use in a country where meat and fish are

a surety. I also give the prices as we found them sixty miles from the railroad.

17	lbs. flour at	$ .04
11	lbs. sugar at	.72
5	lbs. rice at	.10
5	lbs. beans at	.05
2	lbs. bacon at	.25
10	lbs. oat or corn meal at	.05
½	lb. tea at	.60
3	lbs. salt at	.05
5	lbs. prunes or apples at	.22
2	lbs. onions at	.05
1	oz. black pepper at	.10
5	lbs. sweet chocolate at	.40
5	cans evaporated cream at	.15
1	can baking powder	.25
2	bars laundry soap	.10
1	can sulphur matches	.10

Some will at once notice the large amount of sugar and the small amount of bacon on this list. When men are undergoing great exertion in the open air, particularly in a cold climate, their taste for sugar excels anything anyone can imagine. The history of Alaska and the northwest is full of murders and fights occasioned entirely by "sugar hogging" (i. e., one man of the party eating more than his share of the sugar). The bacon on this list is intended only for the beans. The best of tallow for frying can be rendered from the fat of deer and other large animals. The items on this list are not numerous, but a good camp cook can get up a surprisingly large number of dishes from them. For instance, bread, biscuit, corn bread, pancakes, corn

cakes, oatmeal cakes, rice cakes, rice pudding, apple pie, prune pie, and fifty other combinations.

This amount of grub can be easily carried with a pack-train; but when one undertakes to pack it on his own back it becomes an entirely different proposition. In this case he must combine the greatest energy with the least weight and bulk. On a long packing trip we need food that will have the best effect in counteracting the results of an "all-meat" diet and also prevent constipation. Pinole (parched corn ground to a coarse flour), oat meal, or corn meal are all excellent foods for use with meat. White flour is really the very worst of all because it has a low food value and is constipating. Tea is needed as a stimulant, with crystalose (a form of saccharine) to sweeten it. Crystalose comes in very small pills. One pill has the sweetening power of one lump of sugar and an ounce of the stuff will equal fifty pounds of sugar. A small amount of sweet chocolate should also be included to satisfy the craving for sweets and as an energy producer. These articles, with a small bag of salt, represent the simplest efficient ration.

Pack-Saddles

First and foremost the pack-saddle should fit the horse. That having been accomplished, half your troubles are over. The bars should bear evenly on their entire under surface on the horse's back; and the forward (pommel) cross-trees should be high enough to escape the horse's withers with absolute surety, but no higher. The keeping of the saddle in correct position on the horse should be insured by

good double cinches and by breast and breeching straps. The breast strap should not cut off the horse's wind nor should the breeching strap be continually abrading the under side of its tail. The bars should be covered on the under side with sheep skin (with the fleece on) to keep the blankets from slipping and also to soften the bars. Every piece of leather should be attached to the wooden tree so that it is almost impossible to tear it loose. With the saddle is needed a hitch-rope, about ½-inch wide and 12 yards long, with cinch and hook on one end. If alforjas with loops for the cross-trees are not used, a lash-rope, one-quarter of an inch wide and 9 to 10 yards long, is also necessary. Hobbles, bell, and neck-rope (or rope halter) are needed for each horse.

Back-Packs

On the principle that when we pack on our back we must discard every unnecessary ounce, I believe that the best arrangement is to wrap the entire pack in the bedding and to secure it to the back by a pack-harness. Get a harness that fits your shoulders, and that by experiment you know will not abrade. Some men use a tump-line in combination with the shoulder-straps and claim that the weight can thus be divided or shifted. I would recommend trying this, although I personally dislike a tump-line. It seems to me to be unnecessary for a pack weighing under sixty pounds. The harness should be so adjusted to the pack that the latter will lie snugly against the back and shoulders. The pack should not be high enough to push one forward and, above all, should not rest on the small of the back and be loose on the shoulders.

When a long tramp is under consideration, a great deal depends upon how the pack is adjusted.

In making up the pack I place the food in small waterproof silk bags. These, with the other small things, are placed in a flour sack, which answers for a pillow at night. The sleeping-bag and shelter-cloth are wrapped around this sack, the hand-axe tied on the outside, and the whole secured by the pack-harness.

Check-Lists

The following list I have found to be just about the limit in weight for a back-packing trip of a month in a region where meat and fish are a certainty. Plenty of endurance, strength, and a knowledge of woodcraft are also necessary.

Worn—Stetson hat, buckskin shirt and trousers, moccasins, woolen underwear and socks, gloves, neck-handkerchief, cartridge-belt with 50 cartridges, and sheath-knife.

Pockets—Pocket-knife, compass, watch, waterproof match-box, pipe, tobacco-pouch, handkerchief, field cleaner, toilet-paper.

Carry—Rifle with magazine filled. Pack comprising the following: Pack-harness, 1 lb. 4 oz.; shelter-cloth, 1 lb. 12 oz.; sleeping-bag, 8 lb. 12 oz.; hand-axe in sheath, 2 lbs.; cleaning-rod, 9 oz.; flour-sack, 5 oz.; oil-can, 2 oz.; bag of flannel cleaning-patches, 2 oz.; whetstone and awl, 5 oz.; housewife and darning cotton, 3 oz.; fishing-line and six hooks, 4 oz.; comb, tooth-brush, and tooth-paste, 5 oz.; soap and towel, 8 oz.; 1 pair moccasins, 2 pair socks, 2 lbs.; 6 pairs half-soles for moccasins, 1 lb.; quart alum-

inum kettle and cup, 1 lb.; U. S. A. mess-pan, 15 oz.; pepper shaker and 2 spoons, 4 oz.; crystalose, 2 oz.; tea, 8 oz.; salt, 1 lb.; sugar, 4 lbs.; pinole, or oat meal, corn meal, or other cereal, 10 lbs.; prunes or dried apples, 5 lbs.; rice, 2 lbs.; sweet chocolate, 2 lbs.; can of matches, 1 lb. The total weight of this pack is 47 lbs.

This makes a pack which one of ordinary strength can carry all day—when he becomes used to it. It represents the absolute essentials, without which it is unsafe to venture into the wilderness for more than a week at a time. The food-list has been figured out very closely. For instance, the 10 pounds of oat meal will just about last for forty large meals. The prunes and rice are intended for only a meal every five days. Very few meals indeed will have to be composed of meat straight. A diet entirely of fresh meat and fish, however, is not half so bad as it would seem. A healthy man soon becomes accustomed to it, and especially in a cold climate, it seems to supply every want better than any single other article of diet.

There is much to be said in favor of back-packing. It increases many fold that sense of absolute freedom which is one of the fundamental reasons why men try to escape from civilization for a time. There is none of that trouble and worry that we all experience when we have the responsibility of a pack-train. I admit that back-packing, especially in a mountainous country, is downright hard work; but it's work worthy of a man; and once you get into your game country, you have very much less work than has he who must be continually watching and caring for a band of horses. Moreover, the back-packer usually has bet-

ter success. He drops into a new country quietly and unseen. There is none of that clatter of hoofs, jingle of horse-bells, and noise of chopping. Before the games comes to know that there is a human being in the country, he has had his pick.

And the thing is perfectly feasible. Our history is full of cases of men having lived for months—yes, for years—entirely on what they carried on their backs. Daniel Boone, on his first journey into Kentucky, subsisted in that virgin wilderness for two years upon what he carried on his back—probably a rifle, powder-horn, bullet-pouch, flint-and-steel, blanket, knife, small axe, and a bag each of pinole and salt. The only outside supplies he received in all this time was a little additional ammunition brought by his brother. Venison, berries, nuts, and pinole were his mainstay. He was indeed a true man, well versed in woodcraft.

Again, Hearne, the early Canadian explorer, was for over a year in the Coppermine country. He traveled from the mouth of the Coppermine River to Lake Athabaska, between the middle of July and October, on foot and without canoes. During this time he and his large party of Indians were without provisions of any kind and lived on meat straight.

The problem of transportation on a western big-game hunt is a constant one. The country is open and one locality soon becomes hunted out. The reports of the rifles, the sound of axes, and the shouts as the horses are daily driven to camp, soon cause the game to leave for more healthful country. Hence camp must be moved from ten to twenty miles every three or four days. It has always seemed that

one could hunt longer in one locality, and make these short journeys more easily, if he could forsake the pack-train for the back-pack. The latter method is a necessity when one wants to hunt a country inaccessible to horses. On some of my most successful hunts, from the standpoint of both recreation and heads, I have hired a pacer to take me in and bring me out, but in the meantime have carried my entire hunting where I would.

Grub-Lists

A SYMPOSIUM

IN regard to lists of provisions there is a wide difference of opinion and we can do no better here than to quote suggestions of several eminent authorities, based on many years of experience in outfitting and camping. The almost invariable error of the novice is to carry far too large a bulk of provisions and to carry it in a heavy and unhandy form. When much packing is to be done, it is always best to make very close calculations, to eliminate as many luxuries as possible, and to carry what is taken in as compact and adjustable a form as circumstances will permit.

FOR 1 PERSON 1 WEEK IN A MOVABLE CAMP: Flour, 7 lbs.; pork, 5 lbs.; tea, 1-5 lb.; beans, 2 lbs.; sugar, 1½ lbs.; rice, 1½ lbs.; prunes and raisins, 1½ lbs; lard, 1-10 lb.; oatmeal, 1 lb.; baking powder, matches, soap, pepper, salt. Total weight, a little over 20 lbs.—*Stewart Edward White* ("The Forest").

FOR 1 PERSON 10 DAYS IN A MOVABLE CAMP: 5 lbs. of hard bread, 7 lbs. ham, bacon, or pork, 2 lbs.

dried fruit, 2 cans condensed milk, ½ lb. salt, 2 lbs. sugar, 1 lb. coffee, ¼ lb. tea.—*F. A. Bates* ("Camping and Camp Cooking").

For 1 Person 1 Month in a Movable Camp: 15 lbs. flour (includes flour, pancake flour, corn meal in proportion to suit), 15 lbs. meat (bacon or boned ham), 8 lbs. rice, ½ lb. baking powder, 1 lb. tea, 2 lbs. sugar, 150 saccharine tablets, 8 lbs. cereal, 1 lb. raisins, salt and pepper, 5 lbs. beans, 3 lbs. or ½ doz. erbswurst, 2 lbs. or ½ doz. dried vegetables, 2 lbs. dried potatoes, 1 can baker's eggs.—*Stewart Edward White* ("Camp and Trail").

For 1 Person 10 Days in a Permanent Camp: 2 lbs. crackers, 5 lbs. flour, 3 lbs. meal, ½ lb. baking powder, 4 lbs. ham, bacon or pork, 2 cans corned beef, 1 lb. dried fruit, 3 cans fruit, 3 cans condensed milk, 1 lb. rice, 1 quart pea beans, ½ peck potatoes, 1 quart onions, ½ lb. salt, 1 oz. pepper, 1 lb. butter, 3 lbs. sugar, 1 lb. coffee, ¼ lb. tea.—*F. A. Bates* ("Camping and Camp Cooking").

For 4 Persons 2 Weeks in a Movable Camp:

List A—Flour, 24 lbs.; corn meal, 10 lbs.; beans, 6 lbs.; erbswurst, ½ lb.; bouillon-capsules, 1 box; lentils, 2 lbs.; sugar, 9 lbs.; baking powder, 1 small can; coffee, 2 lbs.; butter, 6 lbs.; pork, 10 lbs.; shredded codfish, 1 lb.; evaporated cream, 7 cans; oatmeal, 2 lbs.; rice, 6 lbs.; julienne, 1 lb.; soup-tablets, ½ doz.; evaporated apples, 2 lbs.; evaporated apricots, 2 lbs.; salt, 1 lb.; chocolate powder (or cocoa), 1 lb.; tea, 1 lb.; bacon, 3 lbs.; shelled nuts, 1 lb.; potatoes and onions, as desired; pepper and mustard, small cans.—*D. T. Abercrombie* ("Rod and Gun in Canada," May, 1903).

List B—30 lbs. flour (including rye meal, buckwheat, corn meal, etc.; no bread being taken), 10 lbs. rice, 20 lbs. pork, ham, or bacon, 5 lbs. lard, 10 lbs. sugar, 2 lbs. tea, 3 lbs. coffee, 8 lbs. beans, 10 cans evaporated milk, 10 lbs. butter, 5 lbs. dried fruit, ½ bushel fresh potatoes.—*Edward Breck* ("The Way of the Woods"). This list assumes that fish or game will be secured. A few luxuries may be added.

List C—24 lbs. flour, 10 lbs. corn meal, 6 lbs. beans, ½ lb. erbswurst, 1 lb. bouillon-capsules, 2 lbs. lentils, 9 lbs. sugar, 1 lb. baking powder, 2 lbs. coffee, 6 lbs. butter, 10 lbs. pork, 1 lb. shredded codfish, 5 cans evaporated milk, 2 lbs. oatmeal, 6 lbs. rice, 1 lb. julienne, ½ lb. soup-tablets, 2 lbs. evaporated apples, 2 lbs. evaporated apricots, 1 lb. salt, 1 lb. chocolate, 1 lb. tea, 6 lbs. bacon, 4 lbs. dried potatoes, 1 lb. shelled nuts, 1¼ lbs. dried eggs, ¼ lb. dried onions. —*A prominent firm of outfitters.* In connection with this list it is stated that, by actual experiment with it on various trips, the maximum consumption of food per head per day was 1 88-100 lbs. and the minimum 1 23-100 lbs.

For 6 Persons 2 Weeks in a Movable Camp:

Flour and Flour Products.—Bread, 10 loaves; flour up to 14 lbs.; white beans, 6 lbs.; corn meal, 5 lbs.; rice, 5 lbs.; pancake flour, 2 or 3 lbs.: assorted biscuits (*i. e.*, crackers), 5 lbs.

Vegetables.—Potatoes, ½ bag (or evaporated potatoes, 4 lbs.); onions, up to 10 lbs. (or evaporated onions, 1 lb.).

Meats, Soups, Etc.—Bacon, 20 lbs.; pork, up to 20 lbs.; soup-squares, up to 2 doz.; beef-extract, 1 small jar (or bouillon-capsules, box of 10). In case

ham or canned meat is taken, this quota of bacon may be reduced.

Dairy Products.—Eggs, 4 doz., or ½ lb. desiccated egg; butter (in cans), 10 lbs.; cheese, 2 or 3 lbs.; evaporated cream, 1 doz. cans.

Relishes.—Prunes, 3 lbs.; marmalade, 2 lbs.; Worcestershire sauce, 1 bot.; syrup, 1 can.

Beverages.—Coffee, 5 lbs.; tea, 2 lbs.; cocoa, ½ lb.

Sundries.—Baking powder, small can; sugar, 15 lbs.; salt, 1 bag; pepper and mustard, 1 small can each; vinegar, 1 bot.

This list has been closely calculated. The original compiler had in mind a party of 4 with 2 guides.

FOR 8 PERSONS 4 WEEKS IN A PERMANENT CAMP:

Flour, Flour-Products, and Cereals.—Flour, 84 lbs.; corn meal, 14 lbs.; rolled oats, 14 lbs.; rice, 12 lbs.; macaroni, 5 lbs.; bread, 15 loaves; assorted biscuits (*i. e.*, crackers), about 20 lbs.

Fruit and Vegetables.—Evaporated apples or peaches, 8 lbs.; prunes, 8 lbs.; canned fruit, 1 doz. cans; potatoes, 2 bushels; onions, 20 lbs.; white beans, 20 lbs.; canned vegetables, 1 doz. cans.

Meats, Soups, Etc.—Bacon, 40 lbs.; ham, 20 lbs.; pork, 20 lbs.; canned meats, 6 cans; soup-squares and erbswurst (for pea soup), 4 doz.; lard, 3 lbs.

Dairy Products.—Fresh eggs, 15 doz.; butter (in cans), 24 lbs.; cheese, 6 lbs.; condensed milk or cream, 2½ doz. cans.

Relishes and "Spreads".—Pickles, 6 bots.; sauce, 4 bots.; maple syrup, 2 qts.; jam, 15 lbs.; marmalade, 5 lbs.

Beverages.—Coffee, 10 lbs.; tea, 5 lbs.; co-

coa, 1 lb. To this may be added 8 doz. lemons for lemonade.

Sundries.—Baking powder, 3 lbs.; yeast, 5 pkgs.; sugar, 30 lbs.; salt, 15 lbs.; pepper, 3 cans; mustard, 1 can; vinegar, 1 bot.

This list has been carefully compiled by a Canadian expert, and compared with several other lists based upon practical experience. It may be reduced for a movable camp.

FOR 10 PERSONS 1 WEEK IN A PERMANENT CAMP:

Flour and Flour-Products.—½ stone flour; 20 loaves bread; 1 can soda crackers; 1 can graham wafers; 2 pkgs. rolled oats; 1 pkg. other cereal; 3 pkgs. pancake flour.

Vegetables.—½ doz. cans beans in tomato sauce; 4 cans peas; 2 cans tomatoes; 2 lbs. rice; 1 lb. sago.

Meats, Soups, Etc.—21 lbs. bacon; 3 cans boneless chicken; 3 cans boneless turkey; ½ doz. cans of luncheon tongue; ½ doz. soup-squares; 2 pkgs. bouillon-capsules.

Dairy Products.—12 lbs. table butter; 1 doz. cans evaporated cream; 6 doz. eggs; 7 lbs. cooking butter.

Relishes.—5 lbs. prunes; 2 lbs. evaporated apricots; 5 lbs. evaporated apples; 1 lb. seeded raisins; 8 cakes eating chocolate; 1 can mustard; 1 can pepper; ½ doz. jars strawberry jam; ½ doz. jars marmalade; 1 bag salt; 4 cans peaches; 1 box ginger-chips; 1 can syrup.

Beverages.—2 cans coffee (7 lbs.); 3 lbs. tea; 20 lbs. granulated sugar; 1 tin cocoa; 2 doz. lemons for lemonade.

Canoes and Canoeing

By
Edward Breck
Author of "The Way of the Woods," etc.

THE ideal cruising canoe† will accommodate two men and a reasonable amount of duffle, say 300 to 400 pounds. One 16 feet long and weighing 65 to 75 pounds will do this with ease and safety. I have even used a 15-foot canoe on long tours and found it capacious enough, while its lightness (56 pounds) was a boon on portages. For short journeys, when little duffle is needed, a 14-foot craft will accommodate two men, but it is better to have a canoe that can be used for any kind of trip. On very long tours, especially when more than two men and an extra amount of duffle and provisions must be taken, 18 and 20-foot canoes are needed.

The general shape of the bow of the average canvas canoe is a compromise between the ultra-high, curved

†The writer disapproves of the all-wood canoe. Many, however, find the "Peterborough" type, much used in Canadian waters, equal, if not superior, to the canvas craft.—Ed.

bows of some of the Western Indian craft and the quite flat bow of the typical Micmac canoe, though more resembling the latter. A slight rise keeps the waves from coming too freely over the bow, without offering too much freeboard to the wind.

Canvas canoes are made in two, sometimes three, grades, according to the quality of the material used and the finish. First-grade 15-foot canoes cost from $36 to $41; second grade, $28 to 33. First-grade 16-foot, $38 to $46; second-grade, $30 to $40. The tendency of prices is to increase.

For longer canoes one may reckon $1.50 per foot over the 16-foot prices, though this varies slightly. The catalogues of the best firms should be consulted. Prices are without paddles. From 75 cents to $1.25 is charged for crating, according to size. Indians usually charge about one dollar per foot for a new birch-bark canoe, though in some localities the price runs higher. See that your craft is made with a good flat bottom; Indians are apt to make them too round. The bottom should be of one piece, otherwise it is very vulnerable.

A hardwood keel is essential for every canoe going into rough water. Unless it is specially ordered, makers do not furnish it. It should be about one-half-inch thick, and 2½ inches wide at the centre, according to the size of the canoe, and tapering toward each end, where it is screwed under the brass bang-strips. The other screws, perhaps 8 inches or a foot apart, are put in from the inside, set in the white lead. Ash is a good wood. Such a keel, while it increases the weight by 2 to 4 pounds, strengthens the canoe greatly, and takes a large proportion of

Courtesy D. & H. Railroad

A MOUNTAIN STREAM

majority of upsets occur when this rule is neglected and some sudden movement of one or both men cannot be offset by the steadying paddle. In a gale, keep as much as possible under lee of islands and points. Better still, don't start out at all in such weather.

Canoes are loaded with two objects in view: proper trim, and security of the duffle. See that no box or bundle chafes the sides, nor slides from side to side. Get the load, and particularly the heavy stuff, as low in the canoe as possible, to avoid top-heaviness. Have the receptacles containing provender and cooking utensils where they can be got at easily at lunch time. Do not pack anything that should be kept dry on the very bottom of the canoe, especially if it rains, or on a rough lake or in bad rapids. Be sure to leave room for the two paddlers' feet and legs. When loaded the canoe should float on an even keel, neither end being higher than the other. In rapid water, however, the bow should be a trifle higher than the stern when going up-stream, and the stern a trifle higher when going down-stream. Perhaps it would be more exact to say that the heavier end should be always the down-stream end, whichever direction the canoe is going. This makes steering easier.

Animal-Packing

By

Charles H. Stoddard

THE most common method of transportation in those regions of the Sierras that lie beyond the reach of wagon-roads is on the backs of animals—therefore, since we wished to take our vacations in the high mountains, it was evident that animal-packing must be resorted to. We tried the comfortable camp-wagon so far as wagon-roads extended, packing the horses for further excursions into the mountains, only to find that valley-raised horses could not stand the work on the mountain trails. We also tried hiring animals at the various Sierra outfitting points and these proved better; but there were many shortcomings. The saddles were of cheap construction and most uncomfortable to ride; the pack-saddles and accoutrements were dilapidated and totally inadequate.

After trying different means of transportation we decided to acquire for ourselves an entire outfit for camping—one that would take us over trails or roads

—and to conform it to our own ideas of comfort and convenience. The writer will describe the equipment of our burro-train, which we feel comes nearer to filling the requirements of the average mountain traveler than any other rig to be obtained.

Our search in the mining districts for suitable burros we began in the fall, when prospectors and campers were closing their season and anxious to sell their animals. Thus we were able to get hold of seven exceptionally good burros at reasonable prices—all young, all used to mountain work, and all gentle. Pasture rates for burros are but one-quarter of those for horses. Since we proposed to pasture the animals for eleven months of each year, this was a very important item in considering the selection.

Burros will pick up a living in regions where a horse would starve to death. This is a very good point to bear in mind when you are to travel through regions where feed is scarce. Occasionally, when in the roughest regions, an animal will "go over the grade"; and the writer can assure you that one looks with a great deal more complacency upon the loss of a fifteen-dollar burro than upon that of a one-hundred-dollar horse. Burros have objectionable features, to be sure. They are slow (our outfit averages two and one-half miles per hour on the trail). They are stubborn at times, especially when deep water is to be crossed. But we have found that for campers' use their good points far exceed their bad ones. One out to enjoy a camping trip should not be in a hurry; and as for deep water, although the burro objects to being the first to wet his feet, he readily follows another animal or his own rider into water, so that

this difficulty can be overcome by having a good leader or at the worst by the "boss" shedding some of his clothing and wading ahead. Fortunately, we secured an exceptional burro for a leader and had no trouble in crossing streams—fording some that were fully 4 feet deep.

A dealer had purchased 500 "condemned" army saddles; and by selecting from this lot before his stock had been greatly reduced, we secured high-grade saddles at reasonable prices. We can especially recommend army saddles for campers' use. They are far superior to the old horn type of saddle, being strong and substantial in make-up throughout, light, and easy on the animal's back; having straps fore and aft for securing articles of all kinds and rings on either side for slinging the rifle scabbard, and being most comfortable to ride. Uncle Sam is a professional camper himself, and his boys must have the very best.

Three of our animals were fitted out with the standard "sawbuck" pack-saddle, with good, strong breeching and breast straps. When the saddle is fitted with double cinches, the breast strap may be omitted, but in either case the breeching strap is essential. A good burro will carry 200 pounds without trouble, and our three animals can carry enough supplies for a two months' trip. The writer chose to buy three animals as a matter of safety. It is well not to put all your eggs in one basket; and burros, when packed lightly, can climb better than when heavily loaded. It is well to use thick blankets under both types of saddle. The saddle will not turn if cinched tightly; and furthermore, a sore-backed burro is an exasperat-

ing creature, his method of showing his dislike being to lie down and "lie tight."

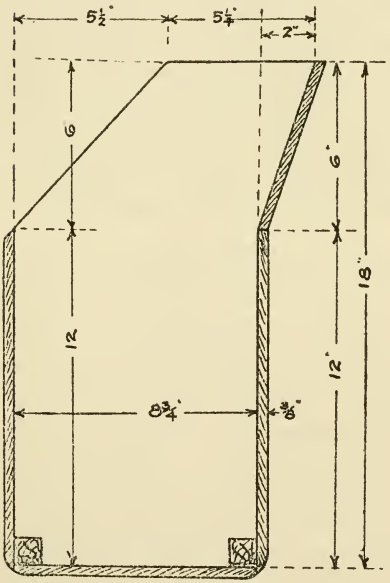
One pack-saddle is equipped with a pair of "kyaks," or sacks, of No. 1 canvas. This canvas comes 22 inches wide and is very heavy and strong. The "kyaks" are 20 inches long, 10 inches wide, and 20 inches deep; double-sewed and with reinforcing strips across the ends at the top. They are therefore strong enough to suspend the weight of the whole animal without tearing or ripping, and will stand any amount of rough usage. Each "kyak" is fitted with a pair of strong leather straps, held in place by "keepers" sewed on the sides of the bags. These straps have loops at their inner ends, to take the pack-saddle crosstrees; and are long enough to pass over the pack and buckle together, thus supporting the load.

"Kyaks" are most excellent receptacles for carrying bedding, sacks of flour, dry groceries, or articles that will not be injured when subjected to the lash-rope or blows from rocks by the trail; but they are very hard on tinware or cooking utensils, not to mention canned-goods or glassware.

The other two pack-saddles are equipped with "alforjas," or "grub-boxes." These grub-boxes are of the dimensions and shape shown in the diagram and are 19½ inches long inside. They are made entirely of well-seasoned spruce; the sides being ⅜-inch and the ends ¾-inch thick. Corner strips are fitted inside, and screws are used throughout rather than nails. The joints are treated with white lead to make them tight. It is doubtful if the lead is of any advantage as a few sharp cracks against the

surrounding scenery soon break the joint loose; but the corner strips are a good feature, as they allow all outside corners to be well rounded. To protect the ends from splitting, strips were fitted across them on the inside and secured with screws. After completion the boxes were painted all over.

The reader will note the angular back of these boxes, designed to obtain a better fit. Padding is placed on each box to prevent galling of the animal's side. The cover of the box consists of two widths hinged together. By opening these covers back on to a light poplar supporting-bar, carried in the case with a fishing rod, a most satisfactory table 21 inches wide by 36 inches long is obtained. An oil-cloth cover is carried in one box.



SECTION OF GRUB-BOX
LENGTH INSIDE 19½"
SIDES, AND BOTTOM OF ⅜" SPRUCE
ENDS OF ¾" SPRUCE

Each box is carried in a canvas bag of exactly the same construction and material as the "kyaks," already described, except that one side of these bags

is extended to fold over and cover the top of the boxes. These bags are fitted neatly to the boxes and provided with straps exactly as are the "kyaks." A pair of boxes in their bags, with straps and all complete, weigh 40 pounds.

Both sets of boxes are identical in size and construction and differ only in internal arrangement—one being fitted with a single partition to form a medicine-chest, another with a pocket for a glass jar, racks for stowing utensils, etc. We use one set of boxes to carry the cooking utensils, the dining outfit, and such articles and provisions as are always required in preparing and disposing of a meal; while in the other set of boxes are carried the provisions in bulk, the canned-goods, etc. It is a simple matter to stow seventy-five pounds of stuff in one of these boxes.

Our clothing we carry in strong sacks tied securely at the open end and placed on top of the pack-saddles as centre-packs. When all is in place the packs are each covered with a canvas "pack-cover" and lashed with a picket-rope. In lashing the packs we do not use the far-famed "diamond hitch," but a simple half-hitch, which holds the packs close to the animal's sides and with loops to the front cross-tree of the saddle to secure it against turning. During a seven weeks' trip not once did a pack slip or turn with this tie, although we traveled some very rough mountain roads. The sacks of clothing are carried on but two saddles, while on the other are carried the extra rifle in its canvas case, the fishing-rods, etc. The heavier rifle is carried in a scabbard on the lead animal.

Each animal is fitted with a good leather halter and a 50-foot picket-rope. For traveling, the picket-ropes for saddle animals are coiled and strapped on the front of their respective saddles. Ammunition, hobbles, bells and other small heavy articles are carried in canvas saddle-bags.

The writer has seen "alforjas" made of rawhides and sole-leather; and of course, these are the height of perfection in their line. Their cost, however, is so high as to render them impossible for many campers; and for those who camp but a month or two each year the wooden grub-boxes will fill all requirements indefinitely.

The "kyaks" and "alforjas" were made by the writer himself at home. The sewing on the canvas bags was done with a hand sewing-tool that cost but **$1.00.** The total cost of material entering into the set of "kyaks" and two sets of boxes, complete, did not exceed **$20.00.**

What To Do If Lost

By
Frank A. Bates ("Matasiso")
Author of "Stories of Lake, Field, and Forest."

I HAVE adopted a positive maxim: "Whatever you do, do not get rattled and lose your head." I often have had to caution a "novus homo" who looked to me for instruction in the woods, to remember the above every minute, and to add to it, "Always carry a compass and *never* think that it lies." Most people have heard of "local attraction" in the compass, and they always think they have found it. There is only about one per cent. of the country that will show anything of the kind, and even then the needle would not be deflected enough to carry the traveler far astray. If it were deflected, it would keep you from wandering in circles, in which lies the greatest danger of being lost.

Now, suppose that you are camping on the shore of a lake in the woods and wish to look over the neighborhood. Your first duty is to look at a map of the locality, if you have not already done so, so that you may have a general idea of the characteristics

of the surrounding country; especially of the trend of the hills, the locations of streams or roads, or the direction of the coast or lake shore, as related to your camp. If you cannot do this, do not go.

When you find that you do not know where you are, and are positive that the sun is setting in the east or some other impossible quarter, endeavor to make up your mind as to where you are within a radius of five miles, and think in which general direction lies some river, road, or other landmark. Then set up a stick or blaze a tree in that direction. If it is not too late in the day, make up your mind in which direction you ought to go, set your compass, take a bearing on some prominent tree or other mark in that course, and go to it. If the woods are so thick that you cannot pick out a mark, set up a peeled stick or blaze a tree once in a while, so that you can look back and see your trail. When you have gone as far in any direction as you are certain of your course, lay out the course again, *always by compass*, and you will come out at a place that you will recognize as on the way to some known point.

If it is late in the day, do not wander around in the dark, but pick out a comfortable place, put down some boughs to lie upon and to build a lean-to; gather firewood enough to last through the night, or as long as you want it to; and make yourself as comfortable as possible until morning. If you are fortunate enough to have some lunch with you, you will probably get a fair night's sleep. You will not starve in one night, and you can usually find something to eat, even if it is not so nice. In very few places would there be the slightest danger of moles-

tation from any source. Next morning you may follow the instructions for getting out, as shown in the preceding paragraphs.

Methinks I hear some one say, Suppose you have no map, compass, matches, etc. I reason that you are a rational being and if you have not these things you will not be foolish enough to go out. In the case of a hunting party in the deep woods, it is the custom among the parties with which I have been associated to have a "lost call." We generally separate in the morning to hunt in different sections, which are duly allotted beforehand, so that each member knows just where the other men ought to be. In case any one of them is so overcome with the ardor of the chase, or in the following of wounded game, that he does not know how to get back to camp, he gives the call—three shots of the rifle in succession. If not replied to, the lost one starts in the direction in which he believes the camp to be situated, repeating the signal occasionally. Usually he is heard before much time has elapsed, and is answered.

The Black Bass and His Ways

By
Tarleton Bean

Chief of the Fish and Game Department, Louisiana Purchase Exposition

AMONG the most popular food and game fishes of North America are the large-mouthed and the small-mouthed black bass. The small-mouthed species is slightly the smaller, and its distribution is more northerly. It seldom exceeds eight pounds, and averages about two and a half, in weight. A fish of two and a half pounds will measure fifteen inches in length, while one of eight pounds should be two feet long. The fish is indigenous to the upper parts of the St. Lawrence basin, the Great Lakes region, and the basin of the Mississippi. East of the Alleghanies it is a native of the headwaters of the Ocmulgee and Chattahoochee, but north of these streams it has been widely distributed artificially in waters to which it is not native.

This bass differs most markedly from the large-mouthed form in the size of its jaws, the shallower notch in the dorsal fin, and the smaller scales. It has about eleven rows of scales above the lateral line and seven below it. Among the many names which have been applied to this fish are the following: Growler, Lake Bass, Big Bass, Spotted Bass, and Archigan. In the Southern States it is known as trout and perch.

The young are dull yellowish green, the sides mottled with darker spots, which sometimes form short vertical bars. There are three dark spots on the head; the caudal fin is yellowish at the base; there is a broad black band near the middle of the tail, and a bright whitish margin behind. The dark lateral band, characteristic of the large-mouthed species, is absent. In the adult the prevailing color is olive green, the stripes on the head remaining more or less distinct. This bass prefers rapid water of clear, pure, swiftly-flowing streams. It is extremely active, and thrives at greater elevations than those preferred by the large-mouthed species.

The food of this fish consists of crawfish, frogs, insects and their larvæ, minnows and other aquatic animals of suitable size. The young can be fed on small crustaceans, such as daphnia and cyclops. This bass follows its prey into shallow water, and frequently leaps far out of the water in its efforts to escape from the hook, or when frightened by the sudden approach of an enemy. It swims in schools, and is often found in the shelter of sunken logs and in the vicinity of large rocks. It hibernates in the winter, ceasing to take food in cold weather, except, perhaps, in artificially-heated water. A number of the young

of the year, received early in October, scarcely fed at all in the following winter.

Spawning begins in March and ends in July. The hatching period lasts from seven to fourteen days. Many of the females, if not all, discharge only a part of their eggs at one spawning. The eggs differ greatly in number and size, according to the age and size of the fish, varying generally from 2,000 to 10,000 per fish, and from 80,000 to 100,000 per quart. The eggs are bound together in bands or ribbons by an adhesive substance. They adhere to stones, on which they are deposited. This is a nest-building species, and it protects its eggs and young. By some writers it is stated that the female prepares the nest before the male joins her; others claim that the male builds the nest and assumes all the care of the eggs and young. The males fight for the possession of the female, and are said to help the process of ejecting the eggs by biting or pressing the belly of the female.

According to the "Manual of Fish Culture" of the United States Fish Commission, both parents watch over the nest, one fish hovering immediately over it and maintaining a gentle motion of the fins for the purpose of keeping the eggs free from sediment; the other acting as an outer sentinel, patrolling eight or ten feet away. Both male and female show great courage when guarding their eggs and young fry. A black bass while protecting its nest nas been known to attack and kill a snake three times its own length. For the first three to five days black bass fry do not average more than one quarter inch in length, and are almost colorless until

the pigment forms along the back, making them appear quite dark when viewed from above, although it is difficult to distinguish the color of the fish when caught on a net of bolting-cloth.

The large-mouthed black bass is also known as Oswego Bass, Green Bass, Bayou Bass, Trout, Jumper, Chub, and Welshman. It is best distinguished from the small-mouthed bass by the greater size of its mouth and the smaller number of rows of scales above the lateral line. There are only seven to eight rows above, and sixteen below the lateral line. In this species the young always have a broad lateral band. The adults are greenish above, silvery below.

This bass has a wide distribution, being indigenous in Eastern North America from Manitoba to Florida and Texas, except in New England and the Middle Atlantic States, east of the Alleghanies, where it has been extensively introduced. It is found also at the mouths of rivers emptying into the Gulf of Mexico, where the water is brackish. It inhabits fresh-water ponds, lakes, and sluggish streams.

In Southern waters the average weight of this bass is less than five pounds and in Northern waters it is still less. In Florida it reaches a large size—as much as three feet in length; and attains a weight of twenty-five pounds. This is a very active fish, and its movements are affected by seasonable changes and the search for food and spawning grounds. The young feed on animal food at an early age. This bass is said to be more cannibalistic than the small-mouthed species. Small fishes of all kinds, crawfish, frogs, insects and their larvæ, and aquatic anmials

in general of suitable size make up its diet. It is even more destructive to fish than the small-mouthed form; it will eat any fish that it can manage to get into its mouth, and it will lie on the bottom for days so gorged that it cannot stir. In voracity it is only equalled, but not excelled, by the pike.

It feeds both at the surface and on the bottom, pursuing its prey with great activity. When surrounded by seines or caught on hooks it will often leap five or six feet out of the water, and its habit of jumping over the cork lines of seines has given it the name of "Jumper." In cold weather this bass seeks deep places, often hibernating under rocks or sunken logs, and in the mud. Favorite fishing localities are under over-hanging and brush-covered banks in the summer, and among aquatic plants, where the fish lies in wait for its prey.

Spawning begins in April and lasts until July. The eggs are adhesive, sticking to stones during the incubation period, which lasts from one to two weeks according to the temperature of the water. The young remain in the nest a week or ten days, and at the age of about two weeks will measure about ¾-inch in length. In suitable waters it is estimated that the large-mouthed bass will weigh, at the age of three years, 2 to 4 pounds. There has been a great deal of discussion about the relative game qualities of the two black basses. There may be some difference in this respect between them in certain localities, but the writer has taken both species in the same lake, and has never been able to detect such a difference.

The bass is usually caught by one of three

methods; by still-fishing with live bait, by fly-fishing, and by surface trolling. Fly-fishing is at its best only in certain months and under favorable conditions of water and weather. According to William C. Harris, it is not necessary to have separate tackle for each kind of fishing. An 8½-foot pliable bait rod and 25 yards of braided silk line, tested to about 15 pounds, may be used for general purposes. To this line may be attached a spoon, a hook, or artificial flies. The equipment should include 6-foot gut leaders, snelled bass hooks of three or four different numbers, a goodly assortment of bass flies, several spoons of varying sizes, a landing-net, a gaff, several minnow hooks, and a bait pail.

In fly-fishing some anglers prefer to wade the streams; others make the guide row the boat very slowly along the shore, and far enough distant from it so that when casting toward the land the flies will drop in water a little less than 12 feet deep. In trolling it is always better to use a rod and reel rather than a hand line, because the enjoyment of fishing is thereby greatly increased. It is customary to troll with about twenty yards of line, and just fast enough to keep the line slightly below the surface. For bait-fishing procure a supply of chub and shiners. In some localities stone catfish, hellgrammites, crickets, crawfish, and fresh-water sculpin (or blob) are successfully used.

The line should be rigged with a snelled hook. Anchor the boat in about 12 feet of water, preferably in the shadow of the shore or an island. Do not attempt to hook the bass as soon as he strikes, but let him run with the bait until he has gorged it. The

fish must be hooked sharply, and much care is necessary in bringing it to the net or gaff. In its struggles to escape it will often dash to the bottom and attempt to break the line under a log or rock; again it will come to the surface, leap out of the water repeatedly, and shake itself to loosen the hook.

About Fly-Fishing for Brook-Trout

By
Charles Bradford
Author of "The Determined Angler," "The Wild-Fowlers," etc.

THE art of catching fishes with artificial lures in imitation of natural insects is the most chivalric of all methods of angling. Fishes, particularly trout, often hook themselves when they seize the fly of a fisherman using a pliant rod that will yield and spring freely. As the game strikes, the angler strikes, hooking the fish swiftly but delicately by a simple turn of the wrist. The trout is not flaunted up in the air by force, as some coarse perch fishermen lift their catch. The trout fisher does not use his arm at all in hooking a trout, beyond aiding the hand in holding the rod for the wrist to do the work. A practiced troutman can secure his fish by moving his hand five inches—a little backward, nervous twist of the wrist.

Trout often snap a fly and spit it out so quickly that the tyro does not have a chance to strike and

hook the prize. At other times they take hold more slowly, and afford the beginner more opportunity to hook them, and, as I have said, they very often hook themselves. The beginner will have some trouble in overcoming the excitement or "trout fever" that always accompanies the trout's rise and strike, but experience will gradually make him more calm and active at this important moment. The tyro trout fisher is often more frightened at the rise of the trout than he would be at the flush of a noisy grouse or the springing of a surprised deer.

When you have hooked the fish, always handle him as if he were but lightly secured. Do not attempt to lift him out or yank him up to you. Keep the line gently taut, and softly lead the prize out of rough water or away from stones, grasses, logs, or tree branches. Do not let him come to the surface until he is pretty well exhausted and you are about to put him in the landing-net. If he is a large fish, tow him ashore if the water edge will permit. Where there are overhanging banks this cannot be done. Do not be in a hurry to get him out of the water. Be calm and work carefully.

If you are using a click reel, and the fish is large enough to overcome the click and run off the line, let him do so, but check him and guide him according to any obstruction there may be. When he has rushed here and there for some little time with his mouth open and with a constant check (the line should always be taut), he will become tired, and when he is tired he will not rush. Then softly reel him in, being careful not to let him come in contact with a stone or weed, which

is sure to arouse him again. Reel him up until your leader touches the tip of the rod. Then, if the leader is of the correct length and if the rod is properly pliant, he will be near enough for you to put your landing-net under him, tail first, as all fish should be netted. Do this quickly, without making a splashing swoop, and he will soon grace your creel.

Several persons expressed an objection to a list of flies I once named in an outdoor periodical, saying that a good angler might kill just as many trout on a quarter the number. Any angler can take even less than one-quarter of the enumerated list and catch fully as many brook-trout as one who might use all of the flies mentioned—if he can pick out the ones the trout are rising to without trying them all until he discovers the killing ones. A chef might please his master with one or two of forty courses billed, *if* he knew what the man wanted. Sometimes an angler can judge the appropriate fly to use by observing nature in seeing trout rise to the *live* fly; but there are times when trout are not rising—times when they are tired of the fly upon the water, and times when the real fly is not on the wing. Then the angler is expected to take matters in his own hands and whip about quietly until he discovers the proper thing. It is better to try for the right ones with a list of twenty-nine than whip over a list of a thousand or more.

I have learned from experience that trout, like human beings, are in love with a variety of foods at different times. Their tastes change with the months, the weeks, the days, the hours; and, under certain conditions which I will presently explain,

even the minutes. When I mention twenty-nine different patterns as being seasonable at a stated period, I do not mean to say that trout will rise to them all at any time and under all conditions. In the first place, the person using them might be a tyro unfamiliar with the gentle art, the streams might be dried up, there might be an earthquake, the flies might be too large and coarse; and, for that matter, a thousand other conditions might interfere. I fish dozens of streams in different localities several times every month during the legal season, and I have been a fond angler—if not a skillful one—since my tenth birthday. Experience on the streams, a true love for nature, and a careful attention to my notebook enable me to separate the artificial flies into monthly lists. No man can class them into weekly or daily lots. The "Eastern gentleman who said if he could have but one fly he would take a yellow one," is probably a good angler, for a yellow fly is a fair choice. If I could have but one fly I should take a—ah! I cannot name its color; 'tis the quaker—a cream, buff, grayish honey-yellow shade.

And now a few words about the proper tackle for mountain streams. Most anglers use rods that are too heavy and too long. I once used a rod of eight feet, four ounces, and I soon found that, while it was a nice weight, it was too long for real convenience. I now use a lancewood rod, but of course the higher-priced popular split bamboo is just as good. I shall not claim my rod's material is the better of the two, as some men do when speaking of their tackle; but I am quite sure I shall never say the split bamboo is more than its equal. I do not advise

as to the material; I speak only of the weight and length. Let every man use his choice, but I seriously advise him to avoid the cheap-priced split bamboo rod. If split bamboo is the choice, let it be the work of a practical rod-maker. Any ordinary wood rod is better than the four-dollar split bamboo affair.

The leader should be of single gut, but the length should be a trifle more than is commonly used. Twelve feet is my favorite amount. The reel should be the lightest common click reel*; the creel, a willow one that sells for a dollar in the stores; and the flies (here's the rub) must be the smallest and finest in the market. Large, cheap, coarse flies will never do for Eastern waters, and you must not fail to secure your list of the proper kind, as well as all your outfit, before you start on your trip.

When you buy your flies buy lots of them, for, be you a tyro or practical angler, you will lose them easier on these streams than you imagine. Yes; you must be very careful about the selection of your flies. They must be small and finely-made, high-priced goods. I wish I might tell you whom to have make them, but I dare not, lest I be charged with advertising a particular house. Regarding the patterns to use, I will say that none are more killing than the general list, if they are the best made and used according to the old rule all are familiar with—dark colors on cold days and bright ones on warm days.

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* Many—especially those who, under certain fishing conditions, do not wish to advertise too widely their whereabouts—prefer a drag reel, which is silent-running.—Ed.

The later the season the louder the fly—that is, when the season closes during hot weather.

I never wear rubber boots to wade in. An old pair of heavy-soled shoes with spikes in their bottoms, and small slits cut in the sides to let the water in and out, and a pair of heavy woolen socks comprise my wading footwear. The slits must not be large enough to let in coarse sand and pebbles, but I find it absolutely necessary to have a slight opening; for if there be no means for the water to run freely in and out, the shoes fill from the tops and become heavy. Rubber boots are too hot for my feet and legs, while the water is never too cold. I have often had wet feet all day, and have never yet experienced any ill effects from it.

I never use a staff in wading, but I should where it is very hard to wade. I have often fallen down in water up to my waist, overbalanced by the heavy current, where the bottoms were rough, with sharp, slimy stones. If you carry a staff, follow the custom of the old anglers. Tie it to your body with a string to keep it out of the way, and allow your hands to be as free as possible for a strike. Your landing-net should be a small one, minus any metal, with a foot-and-a-half handle, and a string tied to a front button on your garment should allow it to be slung over your shoulder onto your back when not in use. Of course, these little points about the use of different things are all familiar to the angler with but the slightest experience, and will appear to him neither instructive nor interesting; but we must, as gentle anglers, give a thought or two to the earnest tyro, for we were young once ourselves.

I always carry two fly-books with me; one big fellow with the general fly stock in, and a little one holding two dozen flies and a dozen leaders, which I carry on the stream. A string tied to this, too, will prevent the unpleasantness of having it fall in the water and glide away from you. I even tie a string to my pipe and knife. The outing hat is an important thing to me. Mine is always a soft brown or gray felt, and I use it to sit on in damp and hard places fifty times a day.

Pointers for Anglers

By
Charles Bradford
Author of "The Determined Angler," "The Wild-Fowlers," etc.

KNIFE.—Your knife should be one the blade of which is ready for use at a touch on the handle. This will enable you to get at the blade without using both hands; and as there are times on the stream when one's hands are full, it may be readily seen how much of an improvement this sort of knife is over the old-fashioned, clumsy, two-hand-requiring, finger-nail-breaking affair.

Rubber-Bands.—These are serviceable little things to the angler. They will hold the rod-joints together on your way to the stream and after your day's play. Do not allow them to fit too snugly, and remove before putting the rod away for any length of time.

Buying Tackle.—There are two kinds of fishing-tackle—one that is practical in fishing and another that is used to decorate the walls of a dining-room, library, or camp. The first is too good to waste on the wall, and the other is too frail and generally

shoddy to angle with. The cheap split-bamboo rod is impossible as an implement of the smart fisherman. Cast with it a few times and you will notice that it gradually loses its spring, and that it will sooner or later bend to one position like a piece of ordinary cane or barrel-hoop. The fine split-bamboo rod and the fine rods made of good steel and wood—greenheart, bathabara, lancewood, etc.—when bent in the cast or play of the fish, will straighten again after being released. The best is the cheapest, in the long run, in fishing-tackle as in everything else. By best I do not mean the fanciest. Gold buttons on a waistcoat will not add to the wearing quality of the material, and a diamond-studded reel would not run any freer or last any longer than the ordinary standard article.

Ferrule-Removing.—Hold the ferrule over the flame of a spirit-lamp, or any flame, until the cement is softened. If the ferrule has been pinned on, take a large needle, break it off squarely, put it on the pin, and strike just hard enough to set the pin below the ferrule; then warm and remove.

Stiff Rod-Joints.—Oil rod-joints that do not come apart or go together readily. Keep them free of sand, etc. Joints that are tightly set can be easily freed by gently warming the material. Apply vaseline lightly or rub the male ferrule on the back of your neck or in your hair before jointing. This will make the ferrules come apart easily.

Rod-Splicing.—Don't make a splice too short when mending a broken rod. Each tapered end should slightly belly, so as to fit snug when wound with the wax thread.

Rod-Varnish.—Wipe off all grease-stains. Dress lightly down with the best copal.

The Rod-Case.—See that it is thoroughly dry before the rod is housed in it; and to avoid bent tips, tie the case-strings loosely.

Cork for Rod-Handles.—Cork is better than twine, wood, rubber, canvas, cane, etc., for the rod-handle. It is pleasant to the touch, will not slip, will not cause blisters on the hand, and is light in weight and neat in appearance.

Landing-Net and Gaff.—What an excellent article is that combined landing-net and gaff! The hook of the gaff closes, so there is no danger of cutting yourself while carrying the affair. The net is attached by unscrewing the hook and screwing on a watch-spring steel bending, which, when not in use, may be carried in one's vest pocket. The steel bending which makes the net hoop has on each end a half-screw, and when these are bent together they form a whole screw which is inserted in the end of the handle. This also holds the gaff when in use.

Feathers.—Use dyed feathers for your flies only when those of nature's dyeing cannot be obtained. Most of the artificially dyed feathers will fade. Strips of feathers should not be taken from one side of the bird only. Fly-wings are collected each from a different wing of the bird.

To Preserve Feathers.—To preserve feathers from moths, keep the feathers in tin cases, with plenty of black pepper, ground fine; and leave a bit of a sponge, well saturated with spirits of turpentine, in the case.

Feather-Staining.—To stain fly-wing feathers

gray-olive, well wash your feathers in a warm solution of soda and soap; then put them into a basin of clean water, and thoroughly cleanse them from the soda. Next put them into a hot mordant of alum and water till thoroughly saturated; then dip in a dye of fustic wood for a few minutes, or seconds only, merely to give them the slightest shade of yellow. Dip then in a pipkin in which a small piece of copperas has been dissolved. This will kill the yellow, and make the feathers a gray-olive.

Fly-Varnish.—For the heads of flies use coach-builder's varnish, laid on with a fine-pointed brush.

Line-Dyes.—To dye a line blue, soak in indigo-water; the stronger the dye the deeper the color. To dye green, soak in a strong decoction of green tea. To dye brown, soak in strong coffee.

Natural Baits.—The wild oat's bearded seed makes a killing trout-fly, and black bass cannot resist a silvery willow leaf if flailed like a live minnow.

Pliers.—Two pairs of the smallest watchmaker's pliers are handy when fly-fishing. With these you can untie the smallest knot in the finest silk line or leader, and do innumerable other delicate jobs.

Shears.—A small pair of shears are very handy to the trout-fisherman in the trimming of leaders, flies, etc. I always carry a pair. When wading a stream, there are times when one cannot open his knife without delay and loss, and it is then the little shears do their best work. Tie them to a button on your coat or you will drop them in the stream at some exciting moment.

Snell.—To prevent the gut snell from slipping, always crush the end between your teeth before whipping it to the hook.

How to Split Shot.—Drive the shot in a pine board until it is practically imbedded, about 1½ inches from an ordinary staple, which should be forced firmly into the wood. The end of the knife blade should be placed under the staple. In securing the shot to the leader, place it 6 inches or farther from the hook.

Ring-Whipping.—Use silk twist in whipping rings or guides in the rod. Draw the final end through a few coils of the whipping by means of a loose loop.

Brass-Black.—To reblacken brasses, mix a little lampblack with spirit varnish. Dress once or twice and let the dressing thoroughly dry before using the copal.

The Rifle in the Woods

BY
GEORGE GLADDEN

WHAT kind of a gun you should take into the woods depends primarily, of course, upon the purpose of your outing; but even if you do not intend to do any serious hunting, it will be well enough to have some sort of firearm along. If it is going to be a case of "hike" or paddle—or both—and therefore, of course, you are going as "light" as possible, but expect to have a chance occasionally to add a rabbit or a partridge or a squirrel to the *carte du jour*, take either a single-barrel pistol or a repeating rifle of .22 caliber. In either case, get a *good* weapon—a Stevens or Smith and Wesson pistol, or a Winchester, Savage, Remington, Marlin or Stevens repeater. *Avoid cheap guns.* Some of them shoot remarkably well, but they are more or less treacherous, because of the inferior

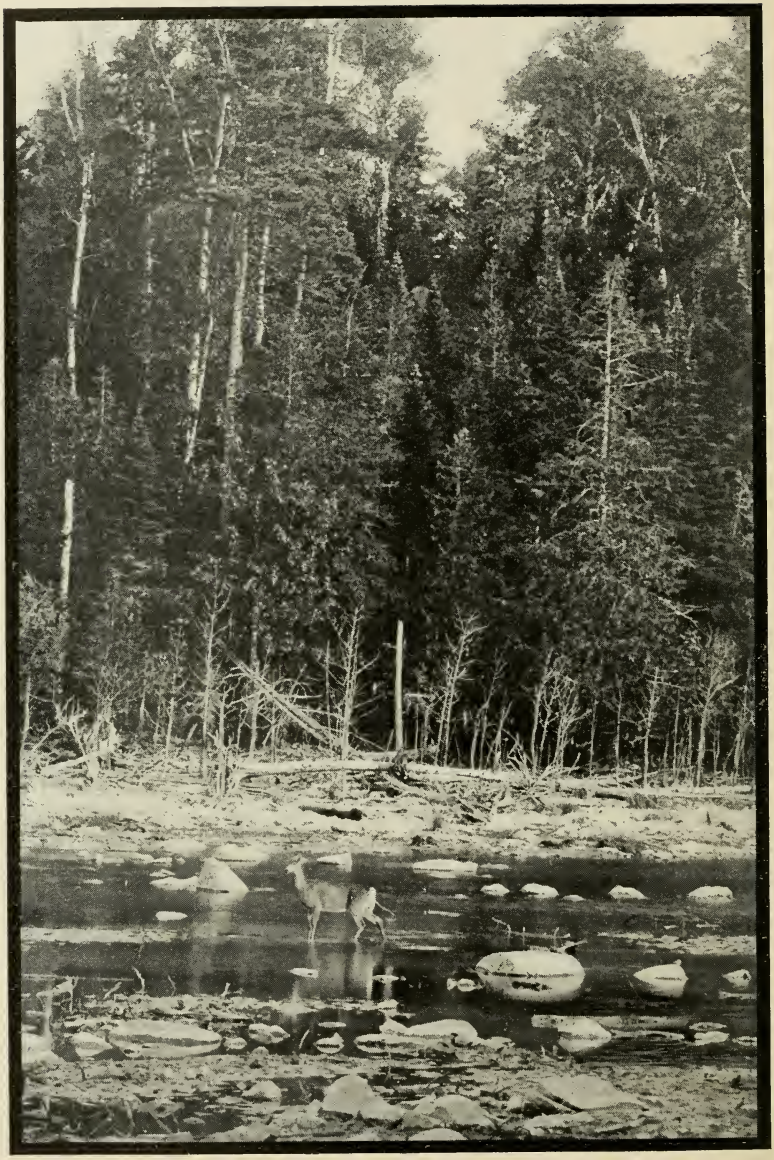
*The Editor presents, by personal preference, the views of a conservative sportsman; realizing, however, that not all readers may fully agree therewith.

material and the imperfect workmanship which make them cheap.

If you take a pistol, get one with a barrel not less than six inches long, and eight inches is still better. Such a weapon (made by either of the manufacturers above named) is very accurate, even with a short cartridge, up to thirty or thirty-five yards, and much further if a long rifle cartridge be used. It is by no means easy to shoot effectively with a pistol, but patience and intelligent practice will develop confidence and accuracy, so that presently you should be able to get your partridge at twenty-five yards almost every time. Don't use a shot cartridge unless you are willing to ruin the barrel for the purpose for which it was made. And don't use an ordinary .22 long cartridge, in either a pistol or a rifle, as it is poorly balanced and will shoot little further than a .22 short, while it will foul the barrel about twice as quickly. For pistol shooting you will be doing well enough if you hit at the extreme range of the short cartridge, though if you have plenty of time and can get a rest, you might want to try for a duck or a partridge at fifty or sixty yards. Then you would need the long rifle cartridge, which is scientifically made, and about twice as powerful as the short. And, by the way, when shooting with a rest, don't hold the *barrel* of your pistol or rifle against any object that is *immovable*, for the recoil will inevitably throw the barrel *away* from such a rest. *Hold* the weapon with your hands and *lean* or brace yourself against the rest. That is, make the rest steady primarily your *body*, not your *weapon.*

MAKING CAMP IN THE ROCKIES

Photograph by E. R. Starbird.



A TIMID NEIGHBOR OF THE WILD

If you can conveniently take a rifle, so much the better, of course, for the bill of fare. And there is probably little choice between any of the above mentioned weapons as far as general effectiveness is concerned. The Savage and Remington .22s have the distinct advantage of being hammerless guns, a model which, all things considered, is safer to handle than is any weapon with an exposed hammer. The Savage has the added advantage of loading by means of magazines (each holding seven cartridges of any one of the three .22 caliber sizes) which may be carried in the pocket and inserted quickly. The other rifles have tubular magazines, lying under the barrel, where they are more or less likely to get a knock which may put the repeating feature of the weapon out of commission. Each of these weapons is operated by a sliding fore-end device, and all are about equal in the durability of their mechanism; while there is probably little difference in their range and killing power. The Winchester company makes a very effective small automatic rifle—called a .22, but in reality somewhat larger—which one may use if he approves of automatic guns—on which subject, more presently. Much care should be taken to keep the barrels of these small rifles *very clean.* A field cleaner should be run through them after every eight or ten shots, and at least once a day the barrel should be thoroughly scrubbed out with oil-soaked bits of cloth on a cleaning rod. A roll of surgeon's bandage—*cotton,* not lint—an inch in width, will be found very convenient for this use. All of the rifles named may be had in the "take-down" model, which makes them easier to clean and to pack.

So much for the small rifle to be used for small—very small—game. If you are going to hunt medium or big game, or will be in a country where you are likely to come across such animals, you will, of course, need a more powerful weapon. By the term "medium game" is meant deer, black bear and mammals like the lynx, fox, wolf, 'coon, etc. By "big game" is meant moose, caribou, elk and grizzly or brown bear. If you are going to hunt seriously big game, it might be well for you to be equipped with the most powerful rifle you can get, though, in point of fact, the biggest of American big game animals are killed by the hundreds every year with modern rifles of relatively small caliber.

Consideration of this general subject brings us at once within sound of the controversy as to the relative effectiveness of the old-style, large-caliber, low-velocity rifle, firing black powder, and the modern, small-caliber, high-velocity weapon, firing smokeless powder. But this conflict of opinion has yearly been growing more and more unequal as the efficiency of the modern weapon has become apparent to a steadily increasing number of intelligent sportsmen. In fact, it has gone much the same way as the debate of fifty years or so ago, as to whether the breech-loader would, or even could, shoot as well as the muzzle-loader, and the still later opposition to the repeating rifle. Only a few years ago (in 1904, to be precise) Mr. Horace Kephart, a keen sportsman and a rifle expert as well, contributed to the volume, "Guns, Ammunition and Fishing Tackle" (in the "American Sportsman's Library"), a very interest-

ing and instructive chapter on "The Hunting Rifle," in which he declared himself as follows:

"A first-class marksman, who depends on making every shot count, will do more accurate shooting with a single-shot rifle, fitted with aperture rear and open wind-gauge front sights, and double set trigger of the 'schuetzen' pattern, than he will with a repeating rifle. The very fact that he cannot 'pump lead' will make him a more careful stalker, and a deadlier marksman, than he who relies on rapid fire. To those who do not hunt for count, but who take an honest pride in skilful woodcraft and clean kills at the first shot, the light-triggered and fine-sighted single-loader will ever remain the true artist's weapon. Theirs is the school of the nail-driver—that good old school of the American backwoodsman, who tanned his boy's jacket for every miss, or of the South African Boer, who said to his son: 'Here is a cartridge; go fetch me an antelope.' I would there were no other school for riflemen to-day."

In a magazine article (published seven years or so later), Mr. Kephart has another informing and eminently sensible discussion* of the ballistics of modern hunting rifles. In this article he has nothing to say about single-loaders as such, and practically all of the cartridges he mentions are, I believe, intended primarily, if not exclusively, for *repeaters*. Furthermore, this article contains these significant comments:

"There was a time when game was so plentiful and (relatively) so unwary that a hunter generally had

*"Killing Power of Bullets," by Horace Kephart, "The Outing Magazine," January, 1912.

a fair chance to display exquisite marksmanship—the art of the nail-driver—at the short ranges that were then the rule.

"Conditions change. We take running shots nowadays and long shots that our forefathers would have considered foolish. In such hunting it is utterly impossible to 'put the bullet in the right place' so unfailingly as of yore. To be humane, then—to be sportsmen instead of butchers and bunglers—we must use charges of much greater power than were customary a quarter of a century ago. This we can do with small bores, owing to improved ammunition."

Now, although these two views of hunting, taken literally, do not actually conflict, Mr. Kephart will not be surprised if some of his readers find in his later expression an implication which does not quite jibe with the general view of the earlier one. In the first place, it is a fact, I think, that at the time Mr. Kephart wrote the article first quoted from, repeating rifles could be had with as light trigger adjustments and as fine sights as are or ever have been used on any single-shot hunting rifle. If conditions have changed—and most certainly they have—so that now it is sometimes absolutely impossible to "put the bullet in the right place," it would seem that a cautious and merciful hunter will arm himself with a rifle which not only fires the modern high-power ammunition, but with which he may, if need be, follow his first bullet with a second, and, if necessary, with a third; and this he can often do with a repeating rifle long before a single-shot weapon could be reloaded even once. Furthermore, with all due re-

spect to Mr. Kephart, I think it may fairly be doubted whether the average user of a repeating rifle shoots carelessly because he knows that he can "pump lead." On the contrary, I believe that the average hunter who "draws a bead" on a moose or deer with an ordinary repeater, will do his best to make the first shot deadly. He may be dimly conscious that he has more shots at his quick command, but if he is a sensible man he is not likely to reckon in such chances; and if he is facing actually *dangerous* game, he certainly will not.

Mr. Kephart's magazine article on the ballistics of modern hunting rifles is a convincing defense of the modern small-calibre rifle which uses smokeless powder to propel a soft-nosed bullet at a high velocity. The article includes tables giving the bullet weight, muzzle velocity and muzzle energy of about seventy different rifle cartridges, grouped according to the author's idea) with respect to whether they should be used for big game, medium game, or small game. Mr. Kephart does not say definitely where he got the data contained in his tables, except that where "the ballistics of this or that cartridge vary somewhat according to the factory loading it," he has given the data "supplied by the different companies." But, assuming that he got all of his figures from the cartridge makers, and (if we choose to be cynical) that therefore it is safe to infer that the effectiveness of the cartridges has not been understated, the fact remains that the tables are highly significant.

"In comparing the killing power of different charges," says Mr. Kephart, "we have one definite datum to start with: The muzzle energy of the

bullet. Energy is expressed in foot-pounds, which means the force required to lift so many pounds one foot from the ground. Energy varies directly as the bullet's weight and as the square of its velocity. Speed, then, is of greater consequence than the weight of the bullet. For example:

Weight of bullet.	*Muzzle velocity.*	*Muzzle energy.*
300 grains	1,500 feet a second	750 foot-pounds
150 grains	1,500 feet a second	1,499 foot-pounds
150 grains	3,000 feet a second	2,998 foot-pounds

"In this instance doubling the weight only doubles the energy; but doubling the speed quadruples the energy. Notice that caliber has nothing to do with this. Weight and velocity determine the resulting energy, no matter what the caliber may be.

"But game is seldom shot at the muzzle of the gun. The energy we are interested in is energy at the point of impact, wherever that may be. Bullets differ very much in the degree to which they maintain or lose speed and energy. The 200-grain bullet of a .401 self-loaded (very short and bluff) loses 35 per cent. of its energy in going only 100 yards; the 300-grain .405 bullet (medium length and taper) loses 26 per cent.; the 150-grain .30 sharp-pointed United States bullet (relatively longer and with fine taper), loses but 16½ per cent. energy in the same distance. Here is another reason for observing critically the length of a bullet in calibers (*i. e.*, length in proportion to diameter) when choosing a cartridge."

Mr. Kephart's statistics of the muzzle energy of various rifle cartridges will surprise even the man who has given some attention to this subject, while they will astonish the novice, if he be an open-minded person. If they be accurate (and I can see no reason

for doubting their accuracy), they demonstrate, beyond all doubt, that "caliber alone is no gauge of power," as Mr. Kephart says. "Let the novice rid himself once and for all," says Mr. Kephart, "of the notion that a big bore necessarily means a powerful rifle, and a small bore means a weak one. This never was true, even in the days of round bullets. . . . In our tables of modern ammunition we see a .35 caliber Winchester of 779 foot-pounds muzzle energy, and another .35 Winchester of 2,687 foot pounds. The former is rather light for deer shooting, and the latter will knock down a grizzly bear. Again, we note a bullet of only .256 inch diameter and 139 grains weight, that has a muzzle energy of 2,585 foot-pounds, which is much greater than that of any .45 or .50 caliber cartridge loaded with black gunpowder that ever was used in a repeating rifle. It attains this power by a muzzle velocity of 2,887 feet a second."

Some of the other surprising contrasts shown in the tables are that the cartridge for the .32 Winchester self-loading rifle, firing a bullet of 165 grains weight, at a muzzle velocity of 1,392 foot-seconds, has a muzzle energy of 710 foot-pounds, and the .35 Remington self-loader, firing a bullet of 170 grains at a muzzle velocity of 2,050 foot-seconds, develops a muzzle energy of 1,585 foot-pounds, while the .30—30 Winchester, Marlin and Savage rifles, firing a bullet of 170 grains at a muzzle velocity of 2,008 foot-seconds, have a muzzle energy of 1,522 foot-pounds, and the Savage .303 (only three one-thousandths of an inch larger in diameter), with a bullet of 195 grains and a muzzle velocity of 1,952 foot-

seconds, has a muzzle energy of 1,658 foot-pounds. All of the foregoing Mr. Kephart classifies as "medium game cartridges," though he concedes that "the larger game on this continent has been killed by the thousands" with rifles using this ammunition. The table giving the ballistics of cartridges which Mr. Kephart recommends for the "big game" of this country—*i. e.* (presumably), the big bears, grizzly, Alaskan and polar; moose, elk, caribou and, perhaps, sheep and goats—also shows some significant comparisons. The most powerful cartridge mentioned is the .425 Westley Richards-Mauser, with a 410-grain sharp-pointed bullet and a velocity of 2,461 foot-seconds, developing the enormous muzzle energy of 5,022 foot-pounds, although the Jeffrey-Mauser of .333 caliber comes next with a sharp-pointed bullet of 250 grains, 2,600 foot-seconds muzzle velocity and 4,200 foot-pounds muzzle energy, while even the little .256 (6.5 mm.) Mausers and Mannlichers, with a 139-grain bullet, sharp pointed, and a muzzle velocity of 2,887 foot-seconds, have a muzzle energy of 2,585 foot-pounds, and the .30 United States 1906 service cartridge, with a sharp-pointed bullet of 150 grains and a muzzle velocity of 2,700 foot-seconds, strikes a 2,429 foot-pound blow. (The last named is, I believe, the cartridge which Colonel Roosevelt found so effective in his African hunting, and with which he actually killed a full-grown rhinoceros.)

Mr. Kephart is at pains to explain, however, that though the normal diameter of a bullet does not control its killing power, its diameter, when expanded by impact, "determines, in great degree, how much of the projectile's energy will actually be *utilized* in

shocking the thing struck." And this brings us to the consideration of the soft-nosed, *i. e.*, "mushrooming," bullet, which has a hard metal jacket enclosing, except at the point, a lead core. As Mr. Kephart says:

"A good bullet for hunting any big game, except the greater pachyderms, is one that will expand when it hits, and still hold together so as to penetrate deeply. Such a bullet 'pulps' tissue all around its course, drives body fluids violently away from it, smashes bones instead of drilling them, paralyzes nerves, and either imparts its full blow by stopping in the body or tears a big hole of exit through which the life-blood rapidly drains. This sounds gruesome, but, in fact, it is humane; for the quicker a beast is knocked down and dispatched, the better it is for all concerned."

This matter of the ballistics of rifle cartridges has been considered at some length so that the reader, who may be quite ignorant on the subject, or, perhaps, knows little except what the commoner calibers are, may make an intelligent choice of the weapon he will take into the woods. For after all, the *cartridge* is the main thing—the factor whose quantity is known and practically unvarying. As to the actual make of rifle to be chosen, that is a question upon which no sensible man will attempt to be dogmatic, since this choice must, in large measure, depend upon purely personal considerations, including whim and even prejudice, which may be quite without reason. As to shooting accuracy, convenience and speed in manipulation, and general durability, any one of half a dozen repeating rifles is as good as any other one.

These rifles (mentioning them in alphabetical order) are the Mannlicher, the Mannlicher-Schoenhauer and the Mauser (German guns); the Marlin, the Savage and the Winchester (American weapons). Broadly speaking, the basic difference between the mechanism for operating these guns is that the German rifles have the bolt action, while the American weapons are operated with a lever, which forms an extension of the trigger guard. Both of these actions have their advantages and their disadvantages; either may be operated easily and rapidly; there is little, if any, choice between them so far as either speed or safety is concerned. As to magazines, it will probably be admitted that either the cylindrical type of the Savage, which carries the cartridges grouped side by side, or the box type of certain of the Winchester models, which holds them one below the other, is to be preferred to the tubular form, which disposes them in a tube lying under the barrel, with the result that the balance of the weapon changes more or less as they are withdrawn. Personally, I use a Savage .303, and prefer it decidedly to any other rifle with which I am familiar, not only because I know it is an exceedingly powerful weapon, and a very easily operated one, but because of its positive safety features, the most distinctive of which is its hammerless action—that is, the hammer is entirely concealed within the lock. But I am not going to turn my Savage on the man who happens to prefer a Winchester or a Mauser.

From the group of rifles just mentioned I have purposely omitted automatic weapons, for which I can see no good excuse, save in the pursuit of actually

dangerous game. And the only really dangerous animals on this continent are the big bears—the grizzly, the Alaskan brown and the polar. In point of fact, tens of thousands of these animals have been killed with weapons far less effective than is the modern hunting rifle. The result is that, so far as the grizzly is concerned (and he is probably the most dangerous of them all), his nature has undergone a remarkable change. When the white man first began to come in contact with this great bear he was quite inclined to be aggressive, whereas to-day he is more than apt to beat a precipitate retreat the instant his keen nose reports the presence of his mortal enemy, man. If encountered suddenly at close quarters, however, or if wounded, he may turn on the hunter, and he is then an exceedingly dangerous animal. The hunter who pursues such game may be excused for arming himself with a large caliber automatic rifle. The fact remains, however, that the experienced, cool-headed and courageous man, armed with any good repeating rifle of suitable power, has the odds largely in his favor, under all normal conditions, in a set-to with the biggest and ugliest grizzly that ever walked. To all of which it may be added that the hunter who is not willing to take any chances at all, had better arm himself not only with the most deadly automatic gun he can get, but with a couple of dynamite bombs as well.

The hunting of harmless game, and especially deer of any kind, with an automatic rifle, seems to me entirely indefensible. In such hunting the rapidity of fire, which is the distinguishing characteristic of this type of rifle, is not needed, and the mere fact that

it is possible, I think, encourages careless shooting, and consequently increases the number of animals who are wounded and escape, perhaps to die a lingering death—an event which is deplored by every true sportsman. I am aware that some of my readers may contend that this does not agree very well with, even if it does not flatly contradict, my criticism of Mr. Kephart's objection to the repeating rifle. But once the facts and the psychology of both positions are clearly stated, I think I shall not be accused of inconsistency. My contention, then, is that a *repeating* rifle may be needed for a second or third shot, no matter how good a marksman the hunter may be; that he can operate it rapidly enough to make these shots, but that doing this involves enough effort and time to make him shoot carefully; while, in the case of the automatic, I contend the extreme rapidity of fire is very rarely, if ever, necessary; that its possibility is almost certain to make the hunter more or less careless, with the deplorable results before mentioned, and that, anyhow, he is a poor sportsman who insists upon taking advantage of every condition and device in order to make the contest as *unequal as possible.* (The same considerations prompt me to refuse to use a silencer on my rifle. In Heaven's name, are we to give the game no chance at all? And there is the further very cogent objection to this device, that, in a forest where there are other humans, hunters or otherwise, it greatly increases their peril, since it muffles the report so that it might not be heard at a distance of a hundred yards, especially if there is much wind and the woods are noisy.)

And if the automatic rifle is indefensible, the automatic shotgun is a thousand times more so, while the "pump-gun" is a close second. With these devil's inventions for the extermination of game birds in the hands of market hunters, in certain well-known resorts of the water fowl along the coast, who can tell what slaughter will be wrought? Think of two of these "sportsmen" rising from their blind as a big flock of black ducks settles down in a close bunch, over their decoys, and letting go *twelve charges* of No. 4 shot in half as many seconds! And that, I submit, is precisely what practically every gunner will do under such conditions, be he a pot-hunter or—at other times—a *sportsman*. He will shoot as fast as he can as long as the birds are at all bunched—trusting to luck, and rarely, if ever, actually aiming at a single bird.

That, men and brethren, is not *sport*. It is *wholesale slaughter*, as stupid as it is ruthless, and intelligent public opinion should forbid such practices (or speedily put an end to them if they have begun) before it is too late.

Hunting Caribou in Newfoundland

By
F. C. Selous
Author of "Sport and Travel, East and West"

ALL North American reindeer are known to both sportsmen and naturalists as caribou, but two undoubted species exist: the Barren Ground caribou (*Rangifer tarandus arcticus*) and the Woodland caribou (*Rangifer tarandus caribou*). Both of these species range right across the North American continent, the former within the Arctic circle from the east coast of Greenland to the western extremity of Alaska, and the latter through the forest regions further south, from Newfoundland to the north-western districts of British Columbia. As might naturally be expected in animals inhabiting such vast areas of country, certain differences in coloration and the general type of their horns have been observed between both the Barren Ground and Woodland caribou inhabiting different portions of their range. These differences, which have been considered sufficient to justify American naturalists in recognizing three distinct species of Woodland caribou, and at least as many of the Barren Ground or Arctic form, are looked upon as merely variations of, at most, sub-

specific value by British zoölogists, who consider that the caribou of Greenland and Alaska are nothing more than local races of *Rangifer tarandus arcticus*, while the Woodland varieties found in Newfoundland and British Columbia are also thought to be only local races of the type species inhabiting eastern and northern Canada. Personally, after having examined the heads of many Woodland caribou, shot in various parts of eastern Canada, as well as a large number killed in Newfoundland, I should say that it would be quite impossible to distinguish the East Continental from the Island form by any constant or well-marked character in the horns of either. Moreover, I was told when in Newfoundland that from time to time caribou have been known to cross the Strait of Belle-Isle in winter on the ice from Labrador to that country. No migration in a contrary direction (from Newfoundland to Labrador) would ever be likely to take place, as the caribou resident on the island entirely desert its northern extremity and move down south before the winter sets in. The fact that Canadian lynxes are universally believed in Newfoundland to be the descendants of animals which, in quite recent times, came over the Strait of Belle-Isle on the ice, seems to me to be an argument in favor of caribou having preceded them. For I should scarcely think it likely that a lynx would leave the coast of Labrador and travel for miles over a frozen sea to an unknown land unless he were following on the track of some animal that occasionally furnished him with food; and although the North American lynx preys principally upon hares and willow grouse, it occasionally succeeds in killing a caribou fawn.

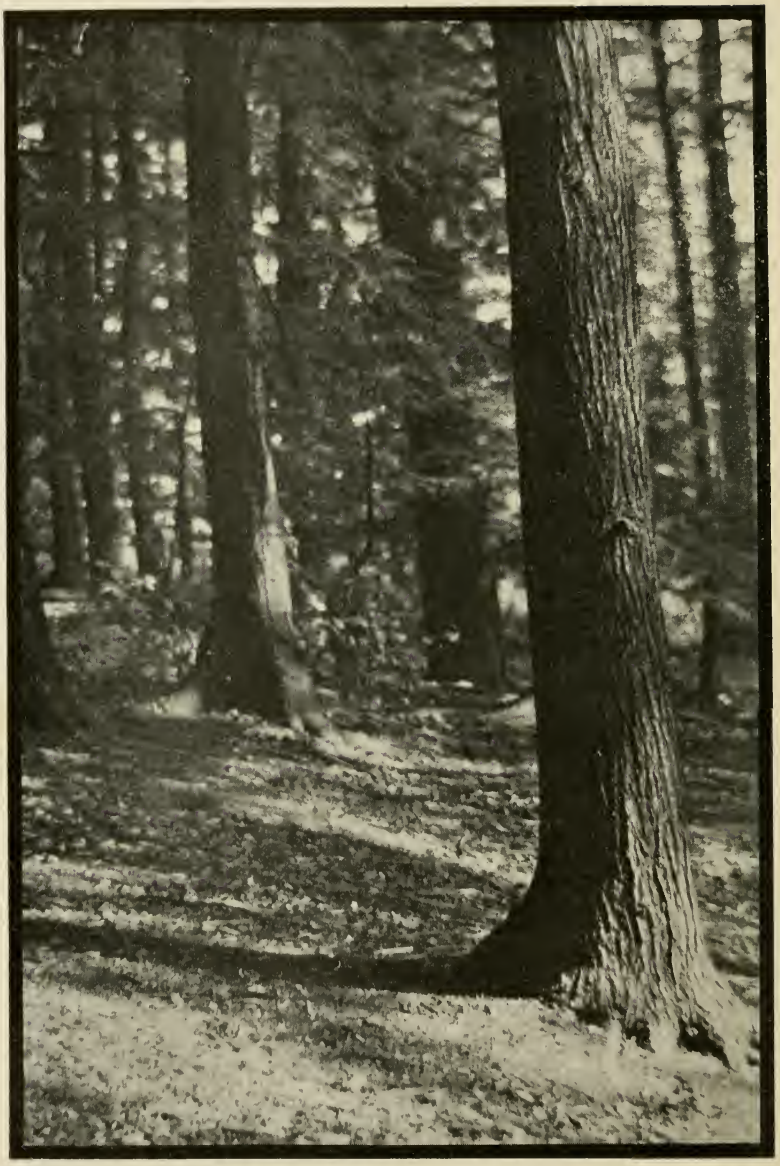
My own personal experience of the Woodland caribou has been gained entirely in Newfoundland. In the spring of the year, when the snow is beginning to melt from the ground, the greater part of the caribou in Newfoundland commence their annual migration toward the wind-swept barrens in the northern parts of the island, where the calves are born, and where they remain until the following autumn, when they again travel southward during September and October. A considerable number of caribou, however, remain in the southern half of Newfoundland all the year round. These latter pass the summer in the thick spruce and juniper woods that clothe the banks of the rivers and the shores of the lakes, which everywhere abound in that region. At that time of the year, and in this part of the country, they do not live in herds, but are usually met with alone or in pairs. In the early part of September every caribou stag I saw, with one exception, was alone, and every doe was also alone, or accompanied by only her fawn. In the case of the only exception to this rule which I met with, a stag and a doe were together.

On the 20th of September I came across a stag with a doe, followed by two fawns—one of the previous year and one only a few months old. The rutting season was then approaching, though I believe that it had not commenced, as all the old stags I had met with up to this time were alone, and those which I killed were excessively fat. When the rut comes on they wander about continually, and eat very little. Each old stag collects as many does as he can find for himself or take from a weaker rival, and thus all the animals, which have passed the summer alone,

Courtesy D. & H. Railroad

A SUNNY GLADE

Photograph by G. C. Bett



"O'ER ALL THE TREE-TOPS IS PEACE"

become formed into small herds, each one of which is ruled over by a master stag, followed at a respectful distance by two or three younger males. As the winter advances these small herds collect together, and sometimes form large droves. Like the males of all other species of deer, Woodland caribou stags fight fiercely for the possession of the does; so much so that the antlers of old stags shot in October are often found to be more or less damaged. Sometimes the horns of two contending caribou stags get interlocked in such a way that they cannot be separated, and the two combatants die a slow and miserable death from starvation. The antlers of the Woodland caribou grow to a large size and make very handsome trophies. The finest specimens known have, I believe, been obtained in the northern part of British Columbia; but I have seen very fine heads from the northern parts of Ontario and Quebec, and also from Newfoundland. The antlers of the Woodland caribou of eastern Canada and Newfoundland are shorter than in either the Barren Ground species or the reindeer of Europe; but, on the other hand, they are much more palmated. Some heads carry over fifty points, but anything over forty points is considered very fine. At the same time, a large, symmetrical head carrying only thirty points might be a finer trophy than one with a much greater number of small points.

Woodland caribou are very strong swimmers, and think nothing of crossing any lake or river they may encounter during migration. They swim higher in the water than any other animal I have encountered, and I believe this is owing to the fact that the long

hairs in their coats (for there is an undergrowth of fine wool) are hollow and must contain a certain amount of air, so that they carry on their bodies a very portable form of life-belt. Much of the country inhabited by the Woodland caribou is soft, spongy marsh, in which a horse or an ox would at once become hopelessly bogged; but the caribou walks and trots over such treacherous ground apparently with the greatest ease. An examination of its feet at once shows one the reason of this, for the hoofs of the caribou are not only very broad and round, but can be splayed out to a much greater extent than the hoofs of an ox, while the dew-claws are prolonged into two spikes which can also be extended wide apart, so that altogether the four widespread hoofs, each supplemented by its long and specially formed dew-claws, form a large bearing surface, capable of supporting a heavy weight on soft ground. The weight of caribou stags in high condition in Newfoundland is said to range from 400 to 500 pounds as they stand, and certain men have "guessed" that certain stags weighed as much as 600 pounds. The Barren Ground caribou is a very much smaller animal and its weight is said to be less than half that of its Woodland cousin.

It is rather strange that, whereas, according to the universal testimony of the many well-known sportsmen who have hunted it, the European reindeer is an extremely keen-sighted and wary animal, which can only be approached by careful stalking, its near relatives, the caribou of North America, appear to me to be, as a general rule, very dull-sighted and less wary than any other wild animal which has been hunted by

man for a long period of time. I am, however, aware of a considerable conflict of opinion on this subject, the caribou of eastern Canada having been described by some authors as wary and keen-sighted animals. I have been told by members of the Canadian Geological Survey, who have met with large numbers of Barren Ground caribou in the desolate wastes of Arctic America, that these animals are so tame and stupid that, once they are found, they can be approached and shot with the greatest ease. In fact, one gentleman told me that there was no more sport in shooting them than there would be in killing sheep in an English meadow. I presume, however, that it would be necessary to approach them against the wind. This was the one point that I found it necessary to study when hunting Woodland caribou in Newfoundland. These animals appeared to me to be fairly keen-scented, and all I saw that got the wind of human beings at once took alarm. But their sense of hearing did not appear to me to be at all well developed, and their eyesight I put on a level with that of the African elephant and the white rhinoceros—the two dullest-sighted animals, with the exception of the caribou, that I have ever met with. In addition to this dullness of sense, they appeared to me to be singularly unsuspicious of danger, and altogether, from what I have myself seen of Woodland caribou hunting in Newfoundland, and from what I have heard from friends who have hunted the Barren Ground species, I consider that, speaking generally, both forms of North American reindeer are among the most unwary of all wild animals, and, therefore, also among the easiest to stalk and kill.

Field Taxidermy

By
J. W. Elwood
President of the Northwestern School of Taxidermy

BY the term "Field Taxidermy" we refer to the proper handling of game-birds and animals in the field, so that they will reach the taxidermist in good condition for mounting or tanning. In this brief treatise no attempt is made to give instructions on the subjects of mounting trophies or tanning hides; but accurate information is outlined for the proper handling of specimens when they are secured, so they will not spoil or be damaged in transit, and so they may be kept raw for a number of weeks or even months if desired.

More specimens are ruined in the field by incorrect handling than are ruined by incompetent taxidermists in the shops. Some persons are in the habit of sending decaying, evil-smelling hides or skins to the taxidermist, and expect him, through some "hocus-pocus," to transfer them into perfect specimens of beautiful birds and animals. If the taxidermist fails to do this,

or notifies his correspondent that he cannot do satisfactory work on account of the specimen being damaged, then the taxidermist is often condemned as incompetent.

Anyone with a little judgment should know that it is impossible to set the feather or hair on a rotten skin, or to make two hairs grow where but one grew before. If the hunter or sportsman will take care of his specimens and get them to the taxidermist in good condition, the chances are that he will get good work; and if you want perfect trophies, do *your* part when you take them in the field.

A great many sportsmen, after securing deer, elk, moose, or other game animals of this kind, cut the throat regardless of location and direction, often mutilating the hide so that it can never be mounted without the cuts and seams showing; or after the skin is removed they are likely to roll it up and put it in a dark, warm place, with the result that it spoils or becomes grease-burned or heated so that the hair slips when it is soaked up for mounting.

To start with, we wish to emphasize four important points in handling game-heads:

First—Never cut an animal on the throat.

Second—Never cut the hide off with a short neck. Leave necks very long.

Third—Never dry a hide in the sun.

Fourth—Never roll a hide up before it is dry.

After an animal has been secured, proceed to skin it as follows: Make an incision down the back of the neck from A to X, as shown in figure 1. From this point make incisions to C and D at the bases of the two antlers. These are the only incisions necessary in skin-

ning game-heads with antlers. If the specimen does not have antlers, then the incision from A to X is sufficient. After this incision has been made, skin the neck in the usual way until you reach the ears, which should be detached *very close to the skull.* Detach the skin around the antlers. The cut should be close to the antlers, leaving no hair attached to them.

Now continue the skinning until the eyes are reached, where you must proceed with a great deal of care, for it is very easy to cut the eyelids, and if you do, you will never be able to repair them perfectly. The corners of the eyelids are likely to be attached firmly to the bone and must be separated by carefully applying a knife or scalpel.

Continue to invert the skin until you reach the nostrils and mouth. See figure 2. Now work slowly and carefully and you will have no trouble. Cut the lips away close to the teeth and make no incision through the skin. The skin will now be entirely separated from the skull, but there will, of course, be a great deal of fat and flesh clinging to it. After the "scalp" has been removed from the skull it will appear like figure 3.

You should now proceed to skin the ears. Some so-called taxidermists do not consider it necessary to skin out the ears at all, but simply preserve them and allow them to dry up with the cartilage inside, but this is always poor work. The specimens never look right, for the ears shrink and shrivel and are unsightly. Therefore, in all cases skin out the ears entirely to the points. Do not make any cuts in the ear-skin, but turn the ears inside out. Starting on the back part of the ear, separate the cartilage as far

Fig. 2

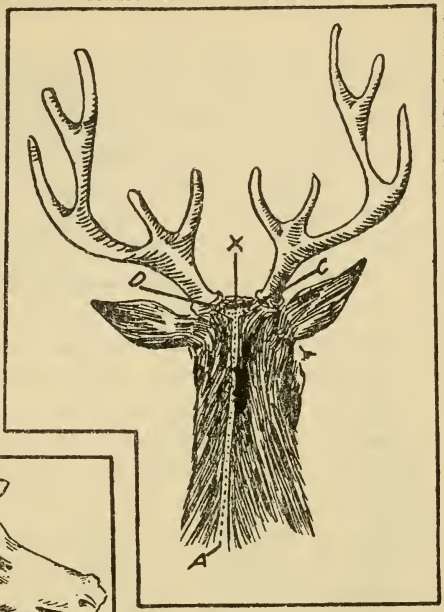


Fig. 1

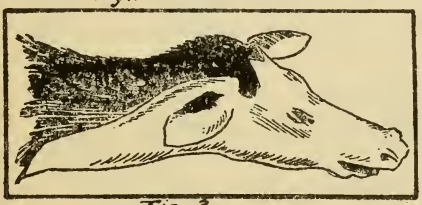


Fig. 3

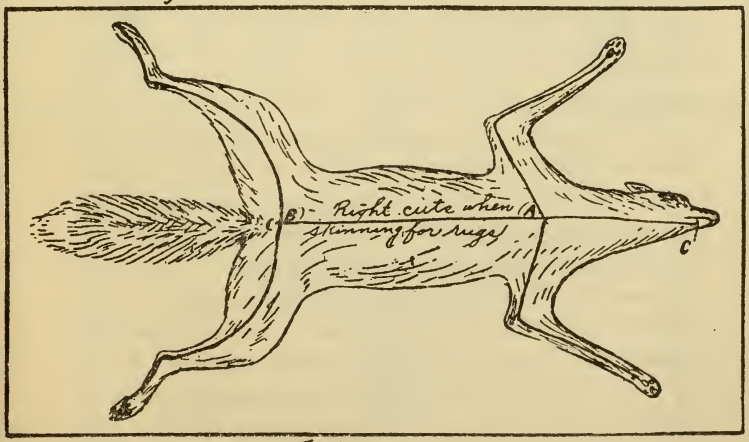


Fig. 4

as you can with a knife, then start to turn it inside out, separating the cartilage from the skin as you go. Do not try to separate it from the front part of the ear at this time, but continue the work on the back part until you have reached the point. Some blunt instrument, such as a spoon-handle or flat hardwood stick, is very useful for this purpose.

After the ears have been skinned the lips should next receive attention. Pare away all the cartilage from about the mouth and nose until the skin is very thin, then go over the entire interior of the hide, removing all the fat and flesh possible. *This work cannot be done too well.* A great many skins are ruined by leaving fat and flesh on them, causing grease-burn. After the fleshing has been thoroughly done the hide should be stretched out without any wrinkles or folds in it, and left to dry naturally in a cool place in the shade.

It is not necessary to put any salt, arsenic, alum, or other chemical on the hide providing the weather is reasonably dry; and if a skin can be saved without any chemicals it will soak up in water to best advantage when ready to mount. Allow the skin to become thoroughly dry and hard; after which it can be folded up and kept for a long time, or safely shipped to the taxidermist with no danger of spoiling. If, however, the weather is damp, it is best to salt the hide thoroughly before leaving it to dry.

Remember that skins must never be folded up or wrapped up while they are fresh and wet, for the chances are that they will be utterly ruined. All of the meat should be cut away from the skulls, which are preserved to be used in mounting. Be sure and

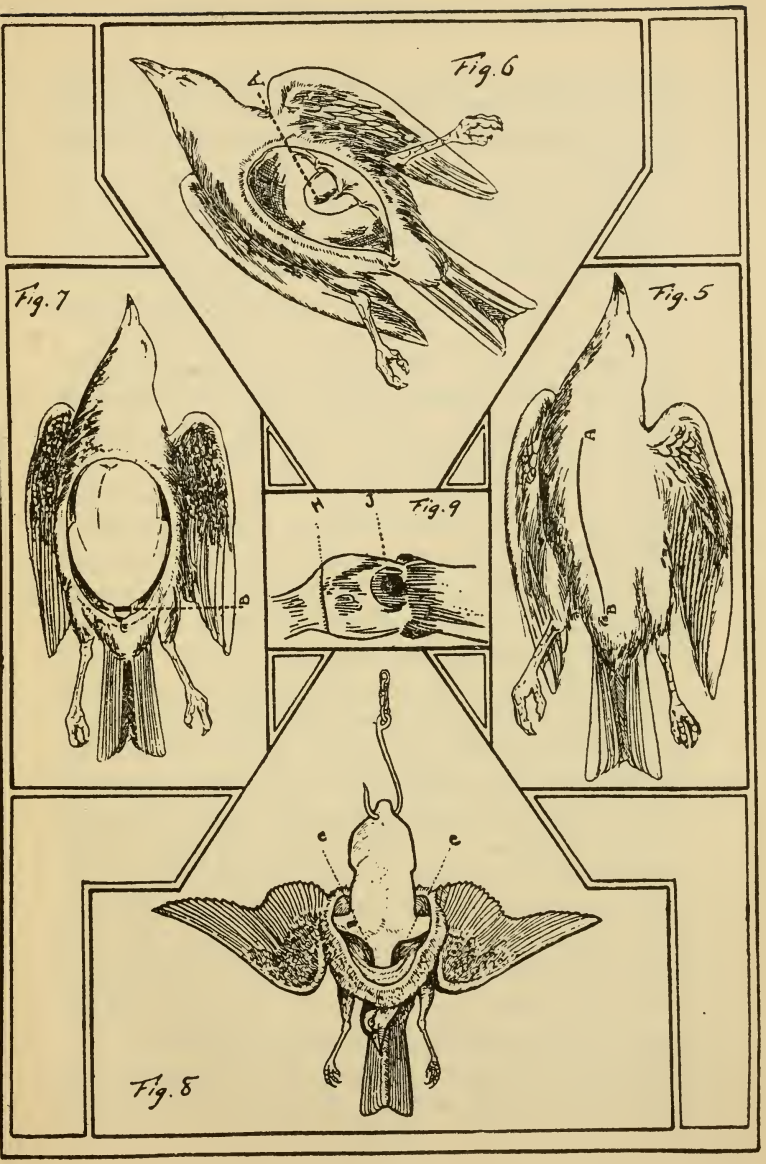


Fig. 6
A
Fig. 7
B
Fig. 5
A
B
H
J
Fig. 9
c
c
Fig. 8

save the lower jawbone. If game-heads are handled as indicated above, there is no chance of their spoiling or reaching the taxidermist in an unsatisfactory condition.

If it is desired to preserve the entire hide for mounting, the skinning must be carefully done and as few cuts made as possible. In skinning almost all animals the incision should be made as shown in figure 4.

Start at A and cut forward to C, then backward to point B. Then make an incision on the inside of the legs from points A and B to the feet. Now skin the whole animal in the usual way. After the skin has been removed, cut open the bottom of the feet and shave away all the meat and cartilage. Split open the tail full length and remove the bone. Skin out the ears and remove the cartilage from them, as has already been directed. Now go over the interior of the skin, removing all the fat and flesh.

After this part of the work has been performed thoroughly, the skin should be stretched out and tacked with the flesh side exposed to the air, in a *dry, cool place in the shade—never in the sun.* Allow the skin to become thoroughly dry, after which it may be wrapped up, put away, or safely shipped. If the weather is wet or damp, give the hide a heavy coating of salt after it has been stretched out. Be sure that the air can reach all parts, such as the face and the inside of the tail and feet. If proper care is used in exposing these parts to the air, the skin will dry evenly, with no danger of the hair slipping.

The whole secret of taking care of a hide in the fields is here briefly stated. Skin it out absolutely,

fully, and completely, and without exception into every part, nook, corner, and cranny. Dry it in the shade, and get it to the taxidermist as soon as you can. If you have to keep the hide on hand for some time, roll it up after it is dry, and cover it heavily with naphthaline-flakes, or pack a large quantity of moth-balls or smoking-tobacco around it, to keep the insects away.

Bacon-beetles do more damage to hides than all other insects. You should watch out for them, and, if necessary, hang the hides out occasionally in the air, and beat them, to remove any bacon-beetles or other insects that may have found their way into the hides.

Never, under any circumstances, roll a fresh hide up, expecting it to dry in this way; for ninety-nine times out of a hundred it will spoil. Do not wad a hide up into a dozen wrinkles, but have it nice and smooth, for the wrinkles are likely to cause the hair to slip from these places when it is soaked up.

As soon as a bird has been killed, fill the mouth and all shot-holes with cotton to prevent bleeding and soiling of the plumage. Wrap the bird up carefully in paper, without disarranging the feathers any more than is necessary, and get it to the taxidermist as soon as possible. In the summer a bird cannot usually be mounted after it has been killed more than two or three days. In the winter it will keep a week or more without freezing, and will keep indefinitely if frozen solidly.

In order to get the best results, however, the bird should reach the taxidermist while it is still fresh. If, however, it is impossible to reach the taxidermist be-

fore the specimen spoils, then it is necessary to skin the bird and preserve the skin only. This requires some skill and practice, but it is not nearly so difficult as one might imagine before he has undertaken the work.

The following explains briefly the method of skinning a bird for mounting: First make an incision down the breast from A to B, as shown in figure 5, using a sharp knife or scalpel. Skin to the right and left from this incision until the attachments of the legs have been reached, when the legs are detached between the long leg-bone and the thigh-bone, as shown at A in figure 6. Continue the skinning until the entire back part of the body is exposed, and then detach the tail from the body at B, figure 7. After severing the tail, continue to skin the body forward until the wings are reached, when they should be detached at the body joints at C and C in figure 8.

Now continue skinning over the neck and head, being careful not to make any cuts in the skin. The skin should be inverted entirely to the beak. It will be seen that the skin of the neck and head will be wrong-side out at this time. Cut off the neck at the base of the skull, including a portion of the skull, as shown at H in figure 9. This will expose the brain, which should be removed. Dig out the eyeballs at J in figure 9, and throw them away.

Now scrape and cut away all the fat clinging to the skin, and restore the skull to its natural position in the skin. Invert the skin over the leg-bones and wing-bones and cut away all the meat from the bones and skin. Also cut away all the cartilage and meat around the base of the tail, but not so much that the

tail-feathers will be loosened. Use great care in removing the fat and flesh clinging to the interior of the skin, for this must be rightly done in order to preserve the skin properly for relaxing and mounting.

If the skin is to be mounted soon, allow it to dry naturally without chemicals; but if it is to be preserved for some months, cover the interior with powdered arsenic; this will not only preserve the skin but will prevent insects from attacking it. In skinning birds with very large heads and small necks, such as ducks, woodpeckers, etc., it may be necessary to make an incision on the back part of the head, as the skull is so large it cannot be turned through the neck skin.

In preparing bird-skins fill the body loosely with cotton and straighten all the feathers out nicely. Allow the skin to become dry; then wrap it in paper and it will keep indefinitely.

Every hunter and sportsman should be able to remove bird-skins properly, for very often exceptionally beautiful and valuable specimens are taken in the field, when it is practically impossible to get them to the taxidermist for many days, or weeks; and unless one is thoroughly posted on preserving skins these trophies must necessarily be lost. After just a few attempts the sportsman can make up a dry skin in this way, so that it can be relaxed and mounted almost as well as a fresh skin.

The Game Market of To-Day

BY

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THE game market of the United States is in a transition stage. The past history of the country has been marked by waste of its natural resources; the future will probably be governed by careful conservatism; we are at present midway between the two extremes, and this condition is reflected in the game markets, which show all the irregularity and inconsistency that naturally accompany a period of change. The older countries of the world long ago learned the lesson experience is now teaching us, and it is significant that England has more game to-day than several sections of equal area in the United States. The wasteful methods of the past have resulted in the hasty adoption of stringent restrictions on trade in game, which is the chief drain on the comparatively small supply of American game remaining. This sudden change of policy has excited the antagonism of the vested in-

terests affected, and has been followed by a constant contest between officials charged with enforcing the new laws and market hunters and dealers whose former privileges have been curtailed. Some game markets, however, are as open at certain seasons as ever, though the former abundant supply is no longer displayed.

The first colonists in America found the land teeming with game. The coasts and inland waters were covered with waterfowl; the forests were filled with deer, elk, wild turkeys, grouse, and smaller game; and the meadows and plains were swarming with prairie chickens and buffalo. During the migration period the waters were alive with waterfowl, and the bays and shores where swans resorted appeared as if dressed in white drapery.[1] "Mighty flocks of geese and brant" and "wild ducks innumerable" wintered in Virginia.[2] Wild turkeys, "the most important fowl of the country," were found in flocks of twenty to forty in all wooded parts of the land, and were bought of the Indians by the New Netherlands colonists for 10 stivers (20 cents) each (Van der Donck). Bobwhites and ruffed grouse were even more numerous, and were regarded as too insignificant to spend powder on. In colonial days Massachusetts even placed a bounty on ruffed grouse to protect crops. The heath hen, or eastern prairie chicken, now confined to Martha's Vineyard and reduced in numbers to

[1]Van der Donck, Adriaen, Description of the New Netherlands, 1653. Collections of the New York Historical Society, 2d ser., vol. 1, p. 174, New York, 1841.

[2]Clayton, John, A letter from Mr. John Clayton to the Royal Society, May 12, 1688, p. 33, 1688.

about 200, furnished an abundant article of diet to the colonists in New England and New Netherlands—so abundant, in fact, that articles of apprenticeship often specified that apprentices should not be compelled to eat its meat oftener than twice weekly.[1] Pigeons were innumerable. The Indians used to gather in bands of 200 or 300 at their nesting places and feast for a month or more on squabs (Van der Donck), and dressed pigeons were sold in Boston for threepence a dozen.[2]

Big game was plentiful. A good buck could be bought in New Netherlands for 5 guilders ($1.20), and often for much less (Van der Donck). The northern woods were filled with moose. Elk were so abundant that a hundred might be found in spring "within the compass of a mile" (Morton). Buffalo were numerous in all open country. A settler at Onondaga Lake, in central New York, estimated that 10,000 buffalo were accustomed to visit the salt springs on his place. In two years he and some companions killed 600 or 700 for their skins, which brought 2 shillings each.

The settlement of the country, at first comparatively slow, has latterly been exceedingly rapid. The line of advancing settlement required one hundred and sixty-one years to extend from the coast of Virginia into Kentucky (1606 to 1767), and nearly a century later it had scarcely crawled beyond the edge of the Great Plains, while now there is hardly a square

[1] Report of Massachusetts Commission of Fisheries and Game for 1907, p. 56, 1908.

[2] There is now apparently but one passenger pigeon left, a female, 17 years old, held in captivity in the Zoölogical Garden of Cincinnati.

mile of tillable land in the entire country which is not settled. Though many spots are yet so wild as to permit a harbor (though not a safe one in open season) where native game may still be found in moderate abundance, and though migratory game birds breeding in northern wildernesses may yet pass in spring and fall with some suggestions of the former myriads, yet the important game of America is nearly gone, and without great conservatism in the immediate future will shortly disappear.

It is interesting to note how late game has continued to be abundant in some regions. A New York newspaper for July 23, 1772, advertising the sale at public auction of a tract of more than 100 acres located in what is now Harlem, in the city of New York, stated that it abounded with "wild fowl, as ducks, geese, pidgeons, quails, etc."[3] On Long Island about the close of the eighteenth century "immense quantities of game and deer" were "found amidst the brushwood," and "great numbers" were "annually killed, as well for the New York market as for the support of the inhabitants of the island."[1] In 1870 the prairie chicken was said to be "found in most western States, but in the greatest abundance in Illinois, Iowa, and Minnesota, Iowa standing pre-eminent in this particular"; and "carload after carload," it is stated, were shipped every Winter to the seaboard cities;[2] and in 1874 it was said to occur

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[1] Weld, Isaac, Jr., Travels through North America during the Years 1795, 1796, and 1797, p. 463, London, 1799.

[2] Fur, Fin, and Feathers, p. 155, New York, 1870.

[3] De Voe, Thos. F., The Market Book, p. 137, New York, 1862.

"in myriads" at Council Bluffs, Iowa.[3] In 1906 the State fish and game warden of Iowa reported to the Biological Survey that the prairie chicken was "very scarce" in the markets of Council Bluffs and other Iowa towns, the few that were on sale having been imported from Minnesota and the Dakotas, and added: "Prairie chickens are becoming more rare in our State every year. . . . Their natural breeding place is in the wild-hay lands, which are becoming very scarce in this State." As late as 1892 game of all kinds was reported as plentiful in the Ozark Mountains of Missouri, and small game was so abundant that it was practically ignored by the natives.[4]

Such accounts might be multiplied indefinitely. These are sufficient, however, to show how recent and rapid has been the change from abundance to comparative scarcity in many regions as settlement has advanced, and to point out how imminent and yet unperceived may be the danger of extermination of many species. Even to-day accounts are published of the enormous and supposedly inexhaustible supply of game in regions where, within a decade or two, the sportsman will probably be making earnest attempts to restock exhausted covers.

As game has decreased, prices have risen. By 1763 game had been so reduced, especially along the Atlantic coast, that although a short distance inland there was an apparently limitless supply, the growing

[3]Coues, Elliott, Birds of the Northwest, p. 420, Washington, 1874.

[4]Shewey, Arista C., Shewey's Guide and Map to the Happy Hunting and Fishing Grounds of Missouri and Arkansas, p. 5, St. Louis, 1892.

scarcity had begun to manifest itself in the markets. On August 24, 1763, a committee selected by the "freemen and freeholders" of New York to "assize" market prices of meats and provisions, published the following schedule of the prices for game:[5]

Venison (maximum price)	per lb.	5d.
Pigeons	per doz.	18d.
Quail	each	1½d.
Heath hens	"	15d.
Partridges	"	1s.
Black and other large ducks	"	1s.
Teal and other small ducks	"	6d.
Turkey cock	"	5s.
Turkey hen	"	3s. 6d.
Turkey cock (poult)	"	2s. 3d.
Turkey hen (poult)	"	1s. 9d.
Wild goose	"	2s.
Wild goose (immature)	"	18d.
Brant	"	15d.
Snipe (large)	per doz	15d.
Snipe (medium)	" "	12d.
Snipe (small)	" "	6d.
Other small birds	" "	6d.

It is interesting to compare these prices with the following (wholesale) prices in the New York markets in 1910:[1]

Grouse, domestic	per pair	$3.00
Grouse, foreign	" "	$1.25 to 1.75
Partridge, domestic	" "	3.50 to 4.00
Woodcock, domestic	" "	1.50 to 2.00
Golden plover	per dozen	2.50 to 3.50
English snipe	" "	2.00 to 3.00
Canvasback duck	per pair	2.25 to 3.00
Redhead duck	" "	1.50 to 2.50
Mallard duck	" "	1.25
Bluewing teal	" "	.75 to 1.00
Greenwing	" "	.75 to .90
Broadbill duck	" "	.50 to .75

[1] New York Journal of Commerce and Commercial Bulletin, October 20, 1910. The wholesale prices of New York are used merely for purposes of comparison with the earlier prices in the same market. They must not be taken as typical of general market prices throughout the United States in 1910.

[5] De Voe, Thos. F., The Market Book, p. 142, New York, 1862.

Rail, No. 1	per dozen		1.00
Rail, No. 2	" "		.60
Venison, whole deer	per pound	.22 to	.25
Venison, saddle	" "	.30 to	.35

The advance in prices can be well shown by a comparative statement of the price of a whole carcass of venison. Assuming that a large deer, such as would find its way readily to the New York market, would weigh 175 pounds, and remembering that an English penny is about 2 cents, we can compare the prices of 1653, 1763, and 1910, thus:

1653. Whole deer, $1.20.
1763. Whole deer, $17.50 (maximum price).
1910. Whole deer, $43.75 (maximum price, wholesale).[2]

The comparison in the table below of some New York prices of 1763 and 1910 with London prices of 1910[3] for the same or similar game, yields significant results.

Comparative prices of game in the markets of New York in 1763 *and* 1910 *and of London in* 1910.

Partridge	$0.24	$1.75 to $2.00		$0.16 to $0.24	
Grouse[1]	.30		1.50	.24	.36
Mallard duck	.24		.62½	.24	.36
Teal	.12	.37½	.50	.16	.24
Snipe (per dozen)	.30	2.00	3.00	.08	.16

It will be noticed that the London prices of 1910 correspond much more closely to the New York prices of 1763 than to the New York prices of 1910.

The last wild buffalo of the United States outside of the Yellowstone National Park was killed in 1897.

[1] Heath hen in the New York markets of 1763.

[2] It is worthy of remark that in Alaska, which is the last part of the United States to be exploited, a whole deer could be bought at Ketchikan in 1908 for $1.50, very little more than was paid by the Dutch settlers in New Netherlands in the seventeenth century.

[3] Taken from the London *Times* for October 14, 1910.

Antelope, elk, and moose will probably survive a little longer, while deer, under favorable conditions, will hold their own for some time to come. The original range of the buffalo extended from central New York to eastern Oregon, and from northern Mexico to Great Slave Lake, nearly touching the Atlantic coast in Georgia and the Gulf coast in Louisiana. By 1730 the last buffalo east of the Alleghenies had been killed. By about 1810 none were to be found east of the Mississippi. In 1870 those that were left were confined to two great herds, the southern of which roamed the plains of eastern Colorado and New Mexico, southern Nebraska, western Kansas and Oklahoma, and northern Texas, while the northern herd ranged from northwestern Nebraska and western Dakota on the east to Montana and Wyoming on the west, and northward into Canada to the northern limit of the original range of the species. Twenty-seven years later not one was left in the United States except a few in captivity.

The elk was originally found as far east as the seaboard States and westward to the Pacific coast. By 1850 it was still to be seen in southern New York and northern Pennsylvania, and in the Allegheny Mountains in Virginia. It lingered in Michigan until 1877 and in the Ozarks in Missouri as late as 1898. There are now fairly large herds in Montana, Idaho, and western Wyoming, and a few small ones scattered in four or five other western States.[1]

[1]The elk was reintroduced in the Adirondacks in New York in 1901, and the original stock of 22 has multiplied until by December 31, 1907, it was estimated that the herd numbered 425. About 50 elk, which probably escaped from the Austin Corbin preserve, are now running wild in New Hampshire.

The American antelope, the only antelope found in the Western Hemisphere, which originally roamed the plains and prairies of the West in countless numbers, in 1900 still covered a large area, but in isolated and rapidly diminishing herds. By 1908 these herds had been so reduced that it was possible to form the following fairly close estimate of the remaining numbers: Colorado, 2,000; Idaho, 200; Montana, 4,000; New Mexico, 1,300; Oregon, 1,500; Wyoming, 4,000; Yellowstone National Park, 2,000; other States, 2,000; total, 17,000.

Moose, which have always made their home in the northern woods of the country, have fared better. In the eastern half of the country they still occur in Maine and Minnesota, and in the West in western Montana, northeastern Idaho, and the Yellowstone National Park and adjacent territory in Wyoming.

Deer have been able to maintain themselves much better than other big game; still, in about one-fourth of the States they have either been killed off or become so scarce that no hunting is permitted, and in the rest are generally confined to restricted localities.

Quail have been reduced almost to the vanishing point in the Northern States, but are still fairly plentiful in the middle belt, and are moderately abundant in the South. Wild turkeys originally furnished the colonists with an unfailing supply of food, and were so abundant as to strike all visitors to the country as the most prominent and conspicuous of the inland game birds. Now they are comparatively rare. None are left north or east of Pennsylvania, but in some localities in the South, particularly where settlement has been slow, they are yet found in fair

abundance. Prairie chickens are still somewhat abundant in a few regions in the Mississippi Valley, especially in Nebraska and South Dakota, yet from the rapid settlement in that section and the ease with which the birds may be secured, they will undoubtedly continue to show a swift decrease.

The various species of grouse that inhabit the country west of the Mississippi are similarly doomed, except that some few may survive in the interior of unreclaimed deserts or in the fastnesses of mountains. Their extermination in all accessible places is dependent merely upon the rapidity with which such places are utilized for agricultural and other purposes. The same is true of the ruffed grouse of the East. This bird, once so numerous as to be rated in the Massachusetts colony as a pest, is now carefully protected throughout its range, and in the few markets in which it is still on sale sometimes brings as high a price at retail as $5 a pair (New York, 1910). The growing scarcity of the woodcock was discussed in the Year Book of the Department of Agriculture for 1903.[1] Of waterfowl it may briefly be said that numerous as they may at times still appear to be, yet compared with their original abundance they are but few. Furthermore, although in the fluctuations produced by climatic and other natural causes they may seem at times to be recovering some degree of their former abundance, yet we must not allow these occasional years of comparative plenty to blind us to the rapid decrease which is in progress.

In seeking the reason for the immense decrease in

[1] Fisher, A. K., Two Vanishing Game Birds.

the game of the country we have not far to look. The recklessness with which the early colonists destroyed the game that filled this land to overflowing is astonishing, even though such wasteful methods are usual in a new country. We find them selecting haunches of venison and leaving the rest of the carcass to the dogs and beasts of prey; giving wild geese to their dogs; and burning canebrakes, thus destroying the haunts of many game animals and birds, merely to secure a day's kill. Such practices continued to prevail on the border line of settlement as it advanced westward, and late in the last century numbers of slain buffalo were left to rot after their tongues had been cut out.

As settlement progressed, a new and far more potent agent of destruction arose in the growing and unregulated trade in game. Just as our forests have been converted into lumber at the demands of trade, so meadow and forest have been depleted of game for commercial reasons. The destructive power of unrestricted trade in game has latterly been greatly intensified by the development of cheap and rapid transit and of cold storage; and had it not been for the final adoption of measures limiting the market supply, our game would be practically gone, or at least utterly beyond the reach of the moderate purse.

A third factor which has operated to reduce our stock of game, and one of no less importance than the other two, has been the conversion of wild into cultivated land. Forests have given way to plowed fields, meadows have been tilled, and swamps have been drained. These places when wild furnish suitable

homes for game animals and birds, and their occupancy by man has permanently reduced the stock of game by depriving it of available shelter. As the country is more and more occupied by man, it must necessarily be less occupied by game; hence we can never hope to restore former abundance. Nevertheless, by adopting methods of conservation adapted to present conditions, we should be able to preserve a fair supply of game indefinitely.

Along with the disappearance of game has grown up a system of restrictive State laws. States have not, however, kept pace with the increasing need of protective measures, but have acted rather on the principle of locking the stable door after the horse has been stolen. Game legislation has usually followed a well-marked course. First, hunting in the season of reproduction has been prohibited; then methods of hunting have been restricted; then sale and possession of game in close season have been interdicted; next, all hunting of certain species has been suspended for a term of years, in order to allow recuperation; then discrimination against non-residents has followed; and, finally, bag limits have been imposed and resident licenses established. These provisions are mainly directed to the hunting of game, but with the growing importance of the game market it has been found essential to deal with this phase of the subject by licensing market hunters, prohibiting export of game, forbidding sale at all times, or combining all these features.

Laws prohibiting all sale and export of game are comparatively recent. Their necessity under the ex-

isting conditions was readily recognized and the growth of such restrictive legislation was very rapid.

The principal game markets of the United States are Chicago, New York, Philadelphia, and Boston. Until recently St. Louis belonged in the list, but the legislature of Missouri passed a law in 1909 closing the game markets of the State. Prior to that time St. Louis had been the depot for ducks of various kinds from Arkansas, Texas, and other States, quail from Kansas and Oklahoma, prairie chickens from Nebraska and South Dakota, and deer from southern States. Some of this game was distributed to smaller markets in Missouri, Iowa, and Illinois, but much of it passed on to Chicago, there to be distributed to various Eastern markets. Chicago draws on Michigan and Wisconsin for part of its supply of venison, and receives much southern game direct. New York, besides obtaining game from Chicago, serves as a depot for game from surrounding points, such as the Susquehanna Flats and the Long Island coast, which furnish large supplies of waterfowl. It is the chief distributing point for game imported from Europe, such as quail, grouse, woodcock, black game, plover, pheasants, partridges, and deer. Boston probably stands first in the trade in deer, derived chiefly from Maine. Philadelphia is supplied largely from local sources, but has obtained quail direct from points as distant as Oklahoma or Texas and deer direct from Canada and North Carolina.

The game market is closed in Detroit, Milwaukee, St. Paul, Minneapolis, and Omaha, and to all game but waterfowl and rabbits in San Francisco, and all

but rabbits in Cincinnati, Cleveland, and Columbus.

Low prices prevail at New Orleans, and also characterized the St. Louis market when it was open. Chicago and New York prices run rather higher, and those of Boston still higher. Philadelphia prices are moderate, those of Baltimore and Washington lower, and those of Richmond, Va., very low, almost rivaling the prices of the New Orleans market. In other cities prices vary considerably; as a rule, however, the less important the market the lower the prices, though there are some striking exceptions.

A few years ago much of the game on sale in the principal markets, particularly in the Middle West, was illegally procured. But since the passage of the Lacey Act and the establishment of more efficient warden service in the various States, the Department of Agriculture and State officials have been able to cooperate more effiectively and most of the illegal traffic has been suppressed.

Deer are fairly plentiful in the principal markets, though scarce in Washington, New Orleans, and Denver. Quail are at present more plentiful than they were a few years ago, and can be bought at from $2.50 to $5 a dozen, according to the market. Ruffed grouse are scarce everywhere, and prairie chickens are practically out of the markets; both species are frequently replaced by guinea fowl, which masquerade as grouse on the tables of hotels and restaurants. Wild turkeys are scarce or absent in all markets; woodcock also are scarce, and usually retail for 75 cents each; snipe and other shorebirds are generally absent, and are not much in demand; ducks are still

plentiful in all markets, though local conditions sometimes diminish the supply. Canvasbacks and redheads command high prices in the East, owing to their quality. Canvasbacks, sometimes sold as high as $7 a pair in Washington and Baltimore, bring only $7 to $9 a dozen wholesale at San Francisco. Mallards usually range from 75 cents to $1.25 each—double the price of the small ducks. Rabbits are plentiful, and furnish a cheap and constant supply of food.

The invasion of the American game market by foreign game is significant. Game is not only more plentiful and cheaper in European than in American markets, but it is sold at a lower price in the United States than corresponding American game. Thus we find foreign plover selling in Boston at $3.50 a dozen, while native plover in the same market are bringing $1.20 a pair, and in Chicago English partridges offered for $12 a dozen, while ruffed grouse are quoted at $22 a dozen. The principal reason for this apparent anomaly is that the European game markets are largely supplied by private preserves, which are comparatively few in number, and near the market, and which can maintain their stock at a fairly constant point; while the American supply is obtained from distant and numerous sources, and is derived from wild and practically unregulated stock. Another reason is to be found in the greater restrictions in the United States on commerce in game. In Europe game may be sold and transported freely in the open season, while in America sale and transportation are necessarily greatly limited. Free mar-

keting of wild game leads swiftly to extermination, while game reared as private property may be marketed freely without reducing the stock.

From the foregoing considerations it will be perceived that the game market of the United States has constantly decreased in importance as game has become less and population has increased. From a time when bounties were paid for ruffed grouse and apprentices appealed from a diet of prairie chicken, we have reached the time when ruffed grouse are within reach only of the rich and prairie chickens are not to be had at any price. The meat of all big game except deer has been withdrawn from the market, and in many large cities even deer are not in the market, either because of non-sale laws or owing to the limited supply. Rabbits and waterfowl are still offered in some numbers, and quail are on sale every open season in a number of cities; but wild turkeys, once so abundant that colonists shot them from their doorways, are rare in Northern markets and are found in very limited quantities in the South; while native woodcock and other shore birds are sold only in small numbers, if at all. The period has arrived when European pheasants, grouse, and plover are rapidly replacing corresponding American birds; and unless suitable measures be adopted for preserving and increasing our own game, we shall doubtless have to depend more and more on imported game for our market supply.

Practical Photographic Hints for the Camper

By
J. Horace McFarland
Author of "Photographing Flowers and Trees," etc.

THE animal photographer must obviously be in touch with his subject sympathetically. He must be a naturalist in the practical if not in the scientific sense. Some preparation is therefore necessary in the way of study before one even considers the apparatus and essentials for photographing animals. Is it birds that we are after? We must know what birds are most likely to be found in a certain location; what their nests are like; something of their habits. We need to recognize their songs or calls. We are better able to use a camera if it has been preceded with a field-glass and much observation and study. Patience, too, the photographer of animals needs to an abnormal extent. He must be willing to sit motionless for hours, only to be disappointed, perhaps, until repeated efforts bring success. He must add to his knowledge and patience

*From "The Photo-Miniature," by permission.

the best judgment; and to these perfect technique. The camerist who would succeed in picturing animals must be free from that uncertainty which accompanies inexperience in the use of his apparatus. The landscape will wait and one can go to it time and again to correct errors of composition or of exposure; but the animal model one finds, often after long travel and waiting, is not so complacent—there is often but one chance and that most uncertain and fleeting. The worker must use his tools unconsciously as it were, as one writes with a favorite pen, merely glancing at it with mind fully concentrated on the subject. There is no time to think whether or not the diaphragm has been set or the slide turned in the plate-holder when, after vigorous search and patient waiting, the critical moment arrives.

If the aspiring worker will go afield, extreme compactness and portability are necessary in his apparatus; and after this, strength and freedom from complication. Any attachments or movements of the camera which cannot be used with the eyes shut, or which are in the least noisy or uncertain, have no place in the outfit for the new hunting. The camera, too, must not merely be strong enough to carry its lens and plate-holder; it should have the very large "factor of safety," as the mechanical engineer puts it when he calculates for a great bridge or a high building. Sometimes the camera may tumble from the tree or merely upset from the tripod. It should be so solid and secure that it will stand such an accident and still do its work. This means a little more weight to carry, to be sure; but for animal photography beware of the featherweight outfit.

Shiny nickel-plate and varnished brass are all very pretty in the camera store but anything but desirable in the field. The Brothers Kearton, who were among the pioneers in photographing birds, used a variety of hollow-tree-trunk blinds etc., as adjuncts in their work, and with great success. The American practice, however, seems to avoid any "dunnage" that can possibly be dispensed with. The experienced worker often carries with him one of the extremely convenient pocket cameras with which to take instant opportunities not available for the larger box. These complete little instruments serve a most useful purpose in the hands of skillful users who will know when and how to take advantage of their readiness. With proper care and practice in holding the camera steady during the quick exposure very sharp negatives may be had that can readily be enlarged to practical usefulness.

Recent literature has given us astonishing proof of the courage, hardihood, and skill of those naturalists who will follow an animal until pictures are obtained, regardless of danger or toil. A. G. Wallihan, for instance, has to his credit some truly marverous hunting and finding—for he has hung on with grim tenacity, "toting" an 8 x 10 outfit through deep snow, amid bitter cold and in desperate straits, until his plates have recorded the elk, antelope, koodoo, and wild-cat in full life and action in their native surroundings.

Flashlight has been used with excellent results, especially in photographing deer in connection with "fire-lighting." Fire-lighting, as every sportsman knows, is the method of hunting deer at night. A small fire, usually a light resinous pine knot, is placed

Photograph by George Gladden

MOOSE-BIRD DINING ON BAKED BEANS
(Near Dungarvon River, New Brunswick)

A TENT-DOOR VISTA—Upper Au Sable Lake

in front of a mirror, by means of which light is reflected into the deer's eyes. Deer are very inquisitive and will invariably stand to investigate this, to them, extraordinary light, which dazzles their eyes so that they can see nothing else. They will even occasionally walk directly up to it. In order to photograph them successfully in this manner it is necessary to have two people working together; one to attend to the fire-light and flash, and the other to work the camera. The focus of the camera must be fixed at any distance from thirty to forty feet, and the operator must judge when the deer is at that distance, for it is impossible to do any focusing at night.

W. E. Carlin, while upon a photographing and hunting trip in the Bitter Root Mountains, made very fine photographs of deer. He worked entirely with a very long distance telephoto lens and with its aid obtained his negatives at distances varying from 25 to 150 yards from his subjects.

The one great thing to remember in the photographing of wild creatures is to get them in as natural and unconstrained an attitude as is possible. This can be done only when they are caught unawares, as they are invariably more or less frightened when they know what is going on, and this fright will inevitably show in the picture either in the unnatural pose or some other unmistakable way.

Followers of the gentle craft of angling are very often photographers, as we know; but the best fish pictures are made by those who are content for the time being to let somebody else handle the rod or the line. The ordinary incidents of coarse fishing—for

pike, jack, barbel, and the other prey of rivers and lakes, are well within ordinary hand-camera treatment; so, too, is sea-angling, that is, fishing with a line from a pier, or an open boat. The characteristic attitudes of anglers with the rod, the play of the fish in the water, and the landing, are not incidents of remarkable velocity.

Photographing a leaping fish, especially if the creature be of the size of a tarpon, is a matter of special difficulty. Julian A. Dimock, who succeeded in the work, tells how, and the hints he gives are applicable to all kinds of sporting angling. He advises the use of a hand-line and playing the fish to encourage his aerial performance. The chief trouble is to know where, or at what distance from the camera, the fish is going to jump. To overcome this trouble, Dimock made his line with ribbons, so that he can keep tab on how much line is out. At 25 feet from the hook is a red ribbon, at 50 feet is a blue one, at 100 feet a white one; thus the distance of the fish can be approximated. If at the moment of the jump the line is taut, the mark accurately gauges the distance; and if the fish jumps straight up a sharp image will be obtained if the camera has been focused for a corresponding distance. A scale on the camera is necessary. One that can be focused by the sense of touch alone is useful, as then the eyes are free to watch the marks on the line and to follow the direction of the fish. The difficulty is that the fish cannot be held at a particular mark and that he may not jump straight up—his movements are notoriously erratic. Dimock discounts the practical value of sights, or cameras in the form of a gun, and urges that a little

practice with merely holding the camera on the knees or against the chest will enable one to center the object on the plate and in most cases keep the horizon-line level. In practice, he sits aft in the boat, as far toward the stern as he can get, the fisherman on the thwart behind him, the oarsman rowing from the forward seat. It rests mainly with the man at the line to keep the tarpon where he is wanted; and this by playing him with a light strain between times while the photographer is changing plate-holders, or when the fish comes in on the line, or by putting on a heavier strain when he seeks to run away. No dependence can be placed on the jump of the creature—when or how or where it will occur; it is quite "up" to the photographer to be ready for the exposure, and make a dead shot as often as he can.

The exposures vary from 1-200 to 1-800 of a second, and the stop of the lens from full aperture to f-16. Dimock has made exposures with a ray-filter; but light, surroundings, and conditions of the water make this a variable quantity. His partiality is for a lens fairly wide open so as to get a fully-timed negative. Philosophically he adds: "After all, the length of exposure and the stop used are of small account. Get the fish in front of your camera; have the focus approximately correct; and you can hardly spoil the result." Not every reader of this article will go tarpon fishing; but the practical hints given on the photographic side of the matter will be found to apply to most kinds of angling.

It is almost certain that the beginner in bird-photography will want to make nest pictures. The true method, that used by the successful enthusiasts

who have added so greatly to our bird knowledge as well as to our store of bird pictures, is to photograph the nests where they belong. Upon nest and bird photography L. W. Brownell writes: "The nests built on the ground, or within a few feet of it, present an easy mark, but those that are placed high up among the branches of the trees, and particularly, as frequently happens, when they are at the extremity of some branch—these are the ones that tax the ingenuity of the operator to the utmost limit. . . .

"In order to show the eggs and inner construction of the nest (of the woodpeckers, wrens, and other birds which breed in excavations in the limbs or trunks of trees), two methods may be followed: Either cut away the wall of bark from the entrance-hole down to the nest, or else, after removing the eggs, ascertain by means of a small stick the exact depth of the hole, and with a small key-hole saw cut out a square hole into the nest, leaving the remainder of the wall complete. . . .

"Photographing the nests of the tree builders is a much more difficult problem. It is then necessary either to lash the tripod to several of the limbs, or else to fasten the camera to some of them by means of a ball-and-socket clamp."

If the nest is on the ground or in a low bush, the task is not difficult. Set up the camera from eight to twelve inches higher than the nest. The eggs are the point of interest; and with the camera looking slightly down, both the inside and the outside of the nest can be shown, and a correct idea of its construction given. Some small nests are very deep, and to see all the eggs the camera must look almost vertically down. As

a picture thus taken looks unnatural, we may compromise a little by raising the eggs on a tuft of cotton, taking care that the cotton does not show, and also that the eggs are not raised too much, or the nest will look unnaturally shallow.

Given favorable conditions, the photographing of young birds is not unduly difficult. Here we must use rapid exposures, for even if the little creatures sit still they breathe rapidly, and so blur their down or budding feathers. The camera may be focused on the nest, as when photographing the eggs. Just before the birds are ready to leave the nest they offer new possibilities, for they may be handled and placed on some limb, where the chances are that they will stay.

So far, we have dealt with the photography of living or moving objects; a branch of work in which hand-camera speed and portability are desirable. In landscape photography there are more occasions when the use of a tripod is necessary. Snap-shot work is a matter of seizing the passing incident; prompt decision and quick camera manipulation are required, for the object is moving all the time, and in a moment may be gone. In landscape work our first desire is, often, a picture. Nothing is to be gained by haste; we must study and criticise our view, look at it from various points, giving differences of arrangement and light, and finally select the best. The real pleasure of landscape photography begins not with the exposure, but with the preliminary work—the study and selection of the subject; and the more care put into these the greater is the anticipatory pleasure in following the negative through development and

printing, and the satisfaction with the final print.

The success of a picture depends largely on a careful selection of viewpoint. Our subject may have for its principal interest a building or a waterfall, or it may be a mere view—a woodland glade or a stretch of country selected for its beauty. In either case we shall find that it has many aspects and that some are palpably better than others. Let us consider a scene with a building as the center of interest; probably it has a "front" or one part which should certainly appear in the picture. Look at the building directly from the front and then see whether it would not be better to choose a corner view, showing the front and one side, both in perspective. There is a rule that a building should be photographed from a distance three times its height. It is a good rule, but one that was enunciated before the advent of the compact hand-cameras, and so we need not follow it literally. The light must be considered; if the front of the building is all in shadow, or all in sunshine, it may appear flat. A diagonal lighting, with bold shadows, is often good pictorially. At certain times the light may be flecked on the building through trees, and this may make or mar the picture. It may be that a building surrounded by trees can best be photographed in winter, or in early spring when the trees are budding with green, but before the leaves have become thick. But we have said enough to emphasize the importance of the point of view.

This is not a treatise on art photography, but we shall give one or two of the simplest rules to be observed by those who desire to get any pictorial quality

in their work. We have just shown how choice of lighting, viewpoint, or even season may affect a picture. The first rule of composition is that symmetrical balance is not advisable in a picture. The sky-line, which is present in most landscape pictures, should not cut across the center of the picture, dividing it into equal parts. It is better to let the sky occupy either one-third or two-thirds of the picture. In distant subjects, such as views of extensive country or lake, the horizon-line may be low, giving two-thirds of the picture to sky; in nearer "foreground" subjects the line may be raised, making the sky one-third only. Of course, rules are suggestive rather than absolute; more often than not the sky-line is uneven and we may even have a well-balanced picture in which the sky-line runs across the plate from an upper corner to the opposite lower one.

The principal object in a picture should not be in the centre, nor should it be too near the edge. As far as a rule can be given, it should be about two-fifths of the distance from one side of the plate to the centre. Thus, if we photograph a house, choosing a side view so that we see the front and one end, the house should be at one side of the centre, with the greater space in front of the house. In photographing a view with a road in it, we spoil our picture by standing in the centre of the road and representing it as an inverted V, dividing the picture. We should move a little to one side and represent the road running diagonally across the plate; probably with a bush or strip of grassy road-side in the foreground.

The noon hours are not the best for photography. Earlier or later the light is softer and less glaring,

and when the sun is lower we get longer shadows, which are often useful in a picture. A golden rule in photography is to expose long enough to get detail in the shadows. Unless shadows are transparent—that is, unless we can see the objects in shadow—the photograph is of little pictorial value. Under-exposed prints, giving solid black shadows, are frequent in elementary amateur photography. While we are sufficiently exposing our shadows we are over-exposing the high lights, but this is a lesser evil. A developer may be used which will bring up detail in full-exposed shadows without clogging or over-developing the lighter parts; but no developer can bring detail from under-exposed plates.

In some ways brilliant sunlight is bad, photographically. When we are photographing trees we may have a thousand tiny reflections from glossy leaves, and these many points of light destroy any feeling of restfulness in the picture. The difficulty can be avoided in portraiture by posing the figure before some bush without the reflecting leaves. In landscape work we must be careful not to choose a sparkling subject. If some beauty or arrangement of the trees particularly pleases, the subject should be noted and returned to at a more favorable time. A cloudy day or the soft light of the evening may make all the difference in the picture.

There has been much scoffing from time to time at pictures lacking detail, or giving a misty effect. Not a few beginners, however, have ambitions in this direction. Unfortunately, there is no royal and easy road to success. There must be both a fair knowledge of the manipulations of photography and an under-

standing of what effect is required before the photographer endeavors to obtain it. For pictorial effects are not usually chance ones. As far as the manipulation is concerned, one of the first steps is a very careful adjusting in focusing. By altering the focus and the stops, various parts of the picture may be thrown slightly out of sharp register. Special development for a soft negative is followed by a choice of printing paper. And, either on the negative or during or after printing, hand-work or local control may be practised. A hand-camera has a good lens, intended to give detail throughout a picture, and it is as well, in the early stages of photography, to be content with this and not hanker after diffusion.

To the envy of his friends, the photographic vacationer sometimes displays pictures of camp-fires in which the lighting apparently comes from the fire and night is represented by a dark background. Such pictures are usually made either by a flashlight operated in the usual way or by throwing flashlight powder into the fire. This latter is a somewhat dangerous proceeding unless the powder be pure magnesium. Pictures can be made, however, by firelight alone, and the genuine thing is usually more realistic than the artificial. Exposures will range from five to thirty seconds and should by all means be made upon backed plates. The brighter the fire and the shorter the exposure, the more satisfactory the pictures will be. A very bright fire will supply sufficient light to photograph surrounding faces in a few seconds, and these few seconds of time will not be sufficient for the fire to form simply a blur upon the plate. The development of the fire itself can be helped by the

application of bromide of potash solution on a small camel's-hair brush. The flowing lines of flame can thus be very delicately emphasized with advantage, but the "faking" must be skilfully done or it will be detected.

The Destruction of Our Forests

BY

RUDOLF CRONAU

Author of "Our Wasteful Nation"

[The question of forest conservation, latterly so much agitated in this country, is one that actively concerns all those who camp or are interested in camp life. Those who will consult our library catalogues or periodical indices will readily discover that in the last few years a great mass of material has been written on this subject. Amid some of this there has, perhaps, been exaggeration in statement; but the evils of our past treatment of our woodlands are only too readily apparent.—We refer readers to such publications as the "Proceedings of the American Forest Congress" (1905); the "Primer of Forestry," by Gifford Pinchot (Forestry Bureau, Bulletin No. 24, Parts 1 and 2, 1899-1905); and "Protection of Forests from Fire," by H. S. Graves (U. S. Forestry Bureau, 1910).

We present (by his special permission) the following by Mr. Rudolf Cronau. Mr. Cronau puts the

matter with an emphasis that should call attention to the facts.]

When the first hardy colonists landed on our shores, the area now encircled by the boundaries of the United States was covered with about 62 per cent. forest, 8 per cent. brush, while the remaining 30 per cent. was open country. The forests, like a mighty unbroken sea, covered the entire east and the centre of our continent in such density and luxuriance that they were not a blessing, but a hindrance to the settlers, who only with the greatest difficulty were able to clear amidst this mass of vegetation the spaces needed for their cabins.

To-day 18 per cent. of our territory is under cultivation; 24 per cent. remains open country; 28 per cent. forest, while the brush land has increased to almost 30 per cent. This increase of the brush is chargeable to only one cause—the destruction of the forests.

As man made himself master over everything on the earth, so he won his battle against the forest. The settlers felled it, smashed it, burned it, till they got all the room they wanted. Their children followed this example and destroyed the forest with the same recklessness they would have used against their worst enemy. Surely, it is a reminiscence of those hard pioneer days, that so many Americans neither love nor respect trees, but have only one thought about them, and that is to cut them down.

The rapidly growing immigration, the erection of new homes for a multiplying population, the creation of new settlements, towns, and cities increased the

demand for lumber and enhanced its value. Great quantities were needed to build houses and stables, to provide furniture, wagons, vessels, boats, bridges, roads, and a thousand other things. Large quantities were required in regions, here and abroad, where wood was scarce, and thus originated the lumber industry of America, which developed in time to one of the most important and most successful enterprises of the nation.

The lumber trade is a legitimate industry, and one that should be so cherished as to insure its profitable permanency. But not all men thus engaged made proper use of it. The large fortunes flowing into their coffers awakened the greed for more; and through their haste to get the best and most valuable, the forests were wantonly destroyed.

Nobody cared. Nobody had ever heard yet of "making conservative use of the forests." What for? For whose benefit? Were not these forests, the limits of which no one had ever reached, inexhaustible? And thus the wasteful and destructive forms of lumbering of the pioneer days were followed by all succeeding generations up to the present day.

This fact is illustrated by the description of eastern lumber camps, as we found it in one of our leading magazines. "In the Maine and New Hampshire forests thousands of men spend the winter cutting the forests of the choicest lumber and destroying young growing trees on every hand in their haste to get ready for the high water in the spring. All the big sound trees of a desirable species are cut without regard to their surroundings; withdrawing the necessary shelter from a crop of seedlings in one place,

killing others in the fall and removing of the timber; here felling all the seed trees, so that there will be no reproduction; there clearing the way for a worthless species that will promptly choke out the valuable ones; cutting the best sections from the fallen timber, and leaving the tops and boughs and parts of the trunks to dry and rot and litter the forest floor with highly inflammable rubbish. Those parts of the timbered forest that do not degenerate into mere brush, grow a thin second crop of very inferior lumber, and sooner or later the inevitable spark, dropped by the locomotive or the camper or the lumberman himself, finds its way into the dry refuse, and what is left of a thousand acres or a thousand miles, as may be, of woodland, goes up in flame."

The lumbermen of our Northwestern States differ from their brethren in the East in their methods of lumbering, but not in the amount of waste produced. Speaking about the conditions in Wisconsin, Governor James O. Davidson said at the conference of the governors, at Washington, that only a few decades ago the northern and eastern parts of Wisconsin were one broad forest, broken only by occasional stretches of prairie land. Pine, hemlock, oak, and maple grew in such abundance that it was the State's proud boast that Wisconsin alone could supply the whole country with timber for a century. Amid its great forests were swamps and hundreds of small lakes, from which deep, swift streams rushed to form the rivers that added their volume to the Mississippi. But, with its great forest wealth and its immense water power, Wisconsin, like its sister States, lived only in the immediate present. Great timber com-

panies, inspired only by an enthusiasm and a greed which knew no bounds, attacked these forests, engaging in a mad race each to strip its territory, to market its lumber first, and then to move forward and continue the destruction. No tree was regarded as too small to escape cutting. Trunks six inches in diameter were cut for lumber. Millions of young trees and saplings, too small to have any commercial value, were crushed by falling timber or were cut to make room for logging roads. Those that escaped the axe of the loggers fell victims to forest fires, the destruction by which can be counted by only the millions of dollars—a further melancholy evidence of the carelessness with which our forest tracts were guarded. To-day Wisconsin is beginning to feel the penalty for this indifference. Its proud position as the greatest timber State of the Union has passed to others.

[Every camper who seeks water to float his canoe, suitable environs for his shelter, or cover for his game, must be desirous of the protection of the forests against the gross exploitation above pictured. Lumber, water-power, and other "interests" are ever alert and seldom distinguished for their altruistic motives or æsthetic appreciation.

All campers should be particular not to do any more cutting of timber about their camp than may be absolutely necessary to clear a camp-site and provide building material and fuel. They should never deface the shore-line of lake or stream. Around many old camp-sites one will find a wanton destruction of trees, which have apparently been felled for

the pure pleasure of exercise. Recreation in camp may be found in other ways than this. Campers should also be especially careful in the use of campfires and matches.]

Photograph by Detroit Publishing Co.

IN THE "NORTH COUNTREE"

A Modern Deerslayer

By

George Gladden

THROUGH the wonderful October forest the old guide had led the way along a trail almost obliterated by a rustling, many-colored carpet of fallen foliage. Where the trail merged gently into a narrow, grass-grown aisle (a bit of long unused wood road), flanked on one side by patches of second-growth spruce and on the other by towering hemlocks and pines, he had halted.

"This is as good a place as any," he had said, in a voice hardly above a whisper. "You stay right here till I come back, which may not be for a couple of hours. But you jest sit mighty still, and look sharp, and listen sharp, too, every minute; for these fellers has mighty fine eyes, and if they see you fust, they jest natchally vanish like a shadder."

Then he had crept away as quietly as the rustling

leaves would permit, and had disappeared in the forest. For this was to be a "drive" hunt for deer, wherein the "driver" makes a wide detour, and then, usually imitating the baying of a hound, works slowly toward the "watcher," who is stationed at a point near which a deer that is "jumped" in this way (and therefore not likely to be much frightened) is apt to pass while retreating by certain known runways to another part of the forest.

Comfortably disposed on a moss-upholstered log, close by its brown and weather-beaten stump, the Watcher realized that there would be no lack of occupation for his eyes and ears, no matter what success might attend Uncle Myron's bogus hounding. For this was the famous Adirondack forest in the very height of its autumn glory—a veritable riot of scarlet and gold, of orange and ochers, crimson and greens, flecking or screening or throwing into bold relief the dark, corrugated trunks of the maples, the soft gray of the beeches, and the satiny white and yellow of the birches, while overhead the gorgeous canopy wove and interwove on the background of a turquoise October sky which seemed strangely near the waving tree-tops.

A puff of wind, and the tree trunks are dimmed by a dense, kaleidoscopic whirl of falling leaves, and the spruces are transformed into the gayest of Christmas trees by the hundreds of red and yellow sparks resting softly in their dark-green masses. What man-made pyrotechnics could equal this dazzling color-shower of nature?

How marked, too, is the difference between the spirit of the deciduous trees and that of the ever-

greens! Up there among the tops of the maples and beeches are the first violins and "Anitra;" while faintly from the swaying pines and hemlocks still farther aloft, and repeated more distinctly from the drooping draperies of the spruces, come the sighing crescendos and diminuendos of the violas and 'cellos —the ceaseless beginning of whispered mysteries, with the development of each lost in the beginning of another. The furtive billowing of the dense, almost opaque arras of spruce suggests concealed conspirators with drawn rapiers—

A flash of white shines through the spruce copse close by the wood road about thirty yards away. It may be the white throat or the whiter tail of a deer. The Watcher slips gently from his seat and crouches against the stump, which is in line between him and the copse where the flash appeared. The barrel of his Savage rises slowly, the "safety" slips back noiselessly, and the rifle is ready. Remember, now, the broadside shoulder shot, if possible.

Another flash, this time tinged with blue. Then another, with more blue—a bluish-white streak, passing from one spruce to the next. The rifle barrel is lowered, the "safety" slides forward, and the Watcher slips back to his seat, to wait for the next movement of the skulking blue jay.

He hasn't long to wait, for soon the inquisitive prowler flashes into the farther side of a spruce hardly ten steps away, and then, determined to solve the mystery of the motionless figure on the log, works his way through the tree and perches on a dead limb, his fine blue and white plumage boldly outlined on the dark-green background. The slightest movement

now would cause a precipitate retreat and the harsh cries of "Thief! Thief!" with which the jay announces his opinion of an intruder upon his domains. But the Watcher doesn't stir. The jay peers and attitudinizes, cocking his head on one side and then on the other; and finally, unable longer to control his consuming curiosity, flits directly to a stump within two or three paces of the Watcher. A single swift glance is enough, and with a flirt of his tail the bird is gone as swiftly as he has come, and as silently. His curiosity is satisfied, and if he has his suspicions, he keeps them to himself—which is the way of jays when they are not startled or angry.

It has been no new experience for the Watcher, who has been investigated by blue jays more than once before, and by other kinds of birds and animals as well—experiences which can be enjoyed by anybody who will sit still and let the woods creatures gratify their curiosity and express their natural friendliness. Yet it has quickened his pulses, and has caused him for the moment to forget all about that crippling shoulder shot.

"Ow! Ow-oo-oo! Ow-oo!"—faint and far away, borne on the same breeze which brings another deluge of color from the swaying trees. That is Uncle Myron, playing hound. Probably it means that he has struck a trail, and perhaps he is working this way. The Watcher knocks the ashes out of his pipe and renews his careful scrutiny of the forest as far as his eyesight will penetrate, making mental note of the appearance and arrangement of the tree trunks, stumps, logs, foliage masses near the ground, and light-and-shade effects. For though the wood road

is part of a runway, and the deer may turn directly into it, and so appear in plain sight, the animal is quite as likely to slip quietly by on one side or the other and strike into the swamp guarded by the hemlocks and pines. A fleeting glimpse of a shadowy something or a flirt of a white tail far away among the tree trunks may be the only signal the Watcher will have—

Hello! There's a white-breasted nuthatch. No; it's his smaller cousin, the red-breasted, and one of the few members of the species the Watcher has seen; yet the bird is easily distinguished from its relative by its red breast and the characteristic white line through the eye, as well as by its shorter tail and its more nervous and fussy manner. But it has the same topsy-turvy habits, and the same curiosity, too, which characterize its relative, for here comes this fellow headlong down a pine tree a few steps away, peering and pausing, pausing and peering with its little beady eyes straight into the face of the Watcher, and uttering the familiar "part-part" of the white-breast, except that the note is pitched a little higher. The Watcher having been warned not to misbehave himself, away goes Master Nuthatch to another pine, then to a spruce, then to a pine, and so on until he disappears; for in its preference for the conifers this bird also differs from the other nuthatch, which sticks pretty closely to the deciduous trees.

Meanwhile Uncle Myron's bogus baying doesn't seem to be getting any nearer; in fact, sometimes it has been so faint as to be hardly audible. But perhaps he is following a trail along the farther side

of a certain pond away over there in the forest, and hopes the deer will turn this way.

Well! Can it be possible? Yes; that certainly is a white-throated sparrow in the underbrush, and *singing*, too, at this season—not an unheard-of thing, to be sure, but uncommon, and therefore the more interesting. As usual at this time of the year, the little minstrel is abbreviating his full springtime ditty, and is giving only a few of the notes of the upward phrase; yet they have the same tremolo effect, the same half-hopeful, half-wistful quality, expressed by the complete song. And what a wonderful little aria it is! There is nothing else quite like it in the woods in its appealing plaintiveness. Even that much greater artist the hermit thrush—

There is a scurry among the leaves, a snapping of twigs, and a red squirrel bounces on to the end of the log on which the Watcher is seated. Up he comes instantly upon his haunches, showing his fine white shirt-front, with his little paws crossed daintily thereon, and gazes impudently at the gray slouch hat and the tan hunting coat hardly twenty feet away.

"Now, who on earth are you, and what are you doing around here, anyhow?" asks Master Red, as plainly as words could have said it.

"It's well for you I have another matter on hand, or you might find out what I think of your sort, my young friend," mutters the Watcher. "How many birds' nests have you robbed this year, you red rascal?"

"Ow! Ow! Ow-o-o-o! Ow!" much nearer than before; and then—*Crack!* That is Uncle Myron's old .38—55 rifle, apparently about a quarter of a mile

away, perhaps less. The squirrel hurtles off the log instanter, as the Watcher turns his head quickly and again peers into the forest. But the minutes pass and there is no movement, far or near, among the tree trunks; and then, with another flurry of leaves, back comes the red, and the Watcher can see, out of the corner of his eye, that the impudent little chap is again cocked up on the end of the log, surveying him. For several minutes the temptation is resisted, and then the Watcher yields and turns his head slowly. Instantly the red crouches and begins to fidget. Then a scramble, and he is a foot nearer; another, and he has advanced two feet more; another and another, and now he is within arm's reach.

What a bundle of quivering nerves and tense little springs, ready for instant release, he is! How his little lungs work—twice as fast as the ticking of a watch; and how his eyes snap, with curiosity and excitement, rather than anger!

A heavily gloved hand moves ever so slowly along the log toward the crouching, palpitating little creature; but the red stands his ground, his black nose wriggling and his tail jerking convulsively. Within a foot or so of the red the hand pauses, and the Watcher steadies himself for a movement which must be quicker than the taut little muscles can produce, when—

"Hello-o-o!"

It is Uncle Myron's voice, very near at hand. The Watcher's involuntary start puts an end to his squirrel-catching project, for with it Master Red has bounded off the log and sped up a tree, like a red-fire ball from a Roman candle.

"Hello!" calls the Watcher.

"Come over here!" from Uncle Myron.

And as the Watcher retreats down the wood road he is followed by a running fire of mirth and ridicule and defiance from Master Red, who declares plainly that he knew perfecty well what it was all about, and was never in the slightest danger of being caught by any such clumsy foe.

At the base of a big maple stood Uncle Myron. There was a questioning expression on his bronzed face as the Watcher came up.

"Did you see anything?" he demanded.

"No," somewhat guiltily.

"Hear anything?"

"No, except your barking and your shot—if it was yours."

"Well, look here." The old guide pointed at some soft, bare earth at the base of the tree, and there, undoubtedly, was the print of a small hoof. "See where he come?" continued the hunter, as he took a few steps and pointed to the newly overturned leaves, with here and there the faint impression of fresh hoof-prints. "It was an almighty nice little buck," he continued. "And you didn't see nor hear him?"

"No. But how do you know it was a buck? Were you close to him?"

"No; I was never nearer than thirty or forty rod, I should say; and I didn't see him plain any of the time. I jest took a long-range snap-shot at him to make him hurry up, and as a signal to you to look out, for he was comin' right in this direction from

the time I jumped him. But I could see he was a pretty good-sized deer; and the track shows he was a buck, because his hoof is blunt and more heart-shaped than a doe's, which is narrower and more pointed. Why, he come by within ten or fifteen rod of you!"

"Could I have seen him if I had been looking right this way when he passed?"

Uncle Myron stepped down to the spruce copse at the edge of the wood road.

"You was sittin' on the log right against the stump, wasn't you?" he called back. The Watcher nodded. The guide glanced back and forth several times, and then returned slowly.

"Well, you might have seen him if you had been lookin' very sharp and he'd happened to pass by some hole in them spruce boughs jest as you was lookin' at it," he replied. "But when he come up over this ridge back yonder a little, them spruces was right in line between you and him, and so they was when he got along here. But if he had come five rod nearer, you'd been bound to see him, unless you was lookin' *square* the other way."

The old hunter stood his rifle up against a tree and slowly filled his pipe, while the expression of disappointment upon his face deepened, as he glanced again in the direction of the spruces and the Watcher's station. He lighted his pipe carefully, picked up his rifle, and turned away, saying:

"Well, come on; we must be gittin' to camp." And then, half to himself, as he turned into the trail:

"Certainly was hard luck; to come so close without

bein' seen. Al-mighty nice little buck, too. Hard luck."

But somehow, to the Watcher it didn't seem to matter greatly, though he didn't say so to Uncle Myron.

A Foot and Saddle Campaign

BY

ERNEST INGERSOLL

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LET me omit the rough methods and vexatious delays of the first morning's setting out. Let me simply suppose the party fairly away, beginning its Summer campaign; and let us leave for the later experiences of actual mountaineering the details and routine of daily life, when the animals have quieted down, and we have hardened to a commendable regularity of work. Starting from near Denver, it is a day's march to the foothills, and, for the beginning, a long march, as you find at the end, somewhat to your surprise if you are an eager novice.

The smooth, level plains, rising almost imperceptibly to the black wall of the forest-clad foot-hills, are covered with short, bunchy buffalo grass, al-

*From "Knocking Round the Rockies" (Harper and Bros.). These experiences and scenes, which belong to two seasons of scientific exploration with the U. S. Geological Survey, depict conditions as they were in Colorado thirty years ago. Every camper will appreciate the vividness of the descriptions.—ED.

ready (though in May) grown sere; and the wagon track you follow dips and rises over greenish gray ridges in monotonous succession. There is little to charm the eye, save the gleaming peaks uplifted ahead—the glorious beacons for our progress. In Spring the weather is likely to be misty, so that the mountains do not stand out with as sharp and definite outline as they will later in the season; but the more prominent heights are very plain a hundred miles away. Long's Peak shows all his gigantic proportions, everywhere mantled in snow; and in clear moments I can catch sight of the silvery crests of snow-covered mountains behind, away in the interior of the Snowy Range.

Rising abruptly from the plains, standing in orderly array, north and south, the peaks crowd together and tower up among the storm-clouds that drift past them, until, as you watch, it is the mountain peaks which seem to be moving, cutting the clouds asunder and dashing the flurries of snow from their fronts, as ships before a gale part the white spray of the waves. This grandeur of the tremendous contest of the elements among the serried ridges is better witnessed in this season of thunder-storms, when Winter disputes every step of Summer's advance, than at any other time. The mountains are still piled high with snow, only the black crests of the cliffs streaking their white cones. And while you are watching the pure gleam of the snow, or the rosy play of sunlight upon it, an indigo cloud, dense and square-fronted with rain, will march up from the valley at one side, cutting off all the rest of the landscape, while a similar phalanx will sweep up on the

left hand, hiding the other mountains behind its black veil, and together they will assault the mountain, whose white and lofty head stands out between them firm and clear against the angry sky. But as the storms strike the monarch's flank and climb his sides and close about his base, sounding the long-roll in their thunder and hurling the bolts of their lightning, the dense blue-black of the rain is changed to the misty white of snow, the darkness gradually vanishes, the ammunition of the lightning is exhausted, and the mountain emerges from the battle whiter than ever with fleecy trophies of victory; while triumphant banners of crimson and gold are hung upon the clouds so blackly defiant a moment ago.

Beyond some grand exhibition like this, the pranks of a few ill-packed mules, or the early vagaries of the beast you ride, there will be little to amuse you. This first day, indeed, is likely to be tiresome and unsatisfactory. You have not become accustomed to your mule, nor he to you. You are sunburnt, your eyes smart with the hot alkali dust—for the cool mountains are not yet reached—and your muscles ache with the unwonted labor of riding. If it happens to have been wholly in the wilderness, you have got along without much trouble, perhaps; but if your road has led you through the miserable outskirts of civilization, you have been gazed at in an annoying way, and chaffed on your "green" appearance; the mules have exerted themselves to enter every gate and doorway, to go anywhere and everywhere but where they ought; and the amount of caution, invective, and hard riding necessary to keep them together and under their respective packs has been

vexatious and fatiguing, conducive neither to observation of scenery nor to the cultivation of Christian virtues.

Indeed, on this initial trip, you get some new ideas on the subject of mountain mules. You learn, for instance, that they love company, cling together, and enjoy walking one behind the other in long file; but no mule has independence of judgment enough to lead a train, even with a bit in his mouth. On the other hand, all mules are "stuck after" a horse, as the muleteers phrase it, and advantage is taken of this to cause them to travel steadily, and to keep them together at night, by having a horse to lead the march. The horse has a stock-bell round its neck, and is ridden by the cook, who is thus debarred from anything except steadily plodding along; while the others can ramble off from the train as much as they please. At night the bell-horse is hobbled, and all the mules are turned loose to graze about the neighborhood, the tinkle of the bell giving us information of their position in the morning; for there is little fear that they will wander away from the horse, unless stampeded, and that rarely occurs. Mules will go absolutely daft over a horse, and there are always fierce contests between the animals on the first day a train starts out as to which shall have the coveted place next to the leader. It often happens that for weeks afterward the victor has to maintain his position by constant exercise of heels and teeth, and with much mulish profanity. I have seen two mules fight so incessantly for the place next the bell-horse, when feeding, that they forgot to eat all day.

This quarreling among the animals, and the continual loosening of their burdens, due to the fulness of their bellies, the stiffness of the new lash-ropes, and the weight of the loads, make frequent stops necessary, and more than one chase occurs after a panic-stricken runaway, which must be caught and repacked, while the remainder wait most restlessly.

Here let me say a word about the art of "packing." Years ago everybody used the old Mexican saw-buck saddle, and it still bestrides the lacerated spines of unfortunate *burros;* but generally it has yielded place to the Californian stuffed aparejo. This is fastened firmly to the long-suffering beast by all the strength of two men, who tighten the girth by bracing their feet against the upright mule's ribs. Then a long lash-rope, having a broad, strong girth at one end, terminating in a wooden hook, is thrown across the aparejo, and the packing begins. The burdens are laid on so as to balance properly, and are held in place until all, or the main part, is in position. Then the ends of the lash-rope are handed back and forth by the man on each side, twisted and looped loosely in a way very dexterous but utterly indescribable, and finally, by moderate pulling, the whole net-work is tightened. The load is now criticised and balanced anew, small articles are tucked in, and it is pronounced ready. One man goes to the left side of the animal and seizes a portion of the rope which passes round the hook, while the other, on the opposite side, turns his back and passes the end of the lash-rope over his shoulder, so as to give him the greatest possible pulling power. This done, he calls back to his invisible mate,

"All set?"

"All set."

"*Give* it to her!"

Then results a sudden and mighty strain in concert, a dreadful groan escapes from the poor mule, there is a stifled sound of creaking and crushing, and in an instant more the fastening is made and the work is done. This lashing is all one rope, but it is crossed and entwined till it seems half-a-dozen. On the top of the load it forms a rectangular or diamond-shaped space, which gives the process its name among the packers. To know how to do it is a passport to mountain society, and establishes your credit. I remember once being alone at a stage station in Wyoming. I wore a partially civilized coat and hat, and hence was under suspicion among the party of men assembled. Foolishly venturing an opinion upon some subject, I was judged by the clothes I wore, and promptly snubbed.

"What right have *you* to know anything about it?" a big Klamath man hurled at me. "You're a tenderfoot!"

"Perhaps I am," I answered, meekly; "but I can put the diamond-hitch on a mule."

"Can you do *that?* Then, sir, you are entitled to any opinion you please in this 'ere court!"

Even this lashing will not always hold firm, however, against equiasinine contortions; but it is incomparably superior to the antiquated and cruel sawbuck.

* * * * * * *

Here, in this Middle Park camp, just as we were sitting down around the table, using bowlders and

war-bags and sacks of bacon as chairs, we saw approaching at a leisurely lope over the prairie, a large, lean sorrel horse that showed good points, but seemed to have been roughing it quite as much as his rider. The horse bore a gaily-rigged ranger's saddle, behind which was slung the carcass of a black-tailed deer, whose flapping head and heels seemed not to disturb him in the least; and in the saddle sat a remarkable man—a person of medium height, but of so powerful a build that his breadth of chest and massive loins seemed better fitted for a giant. His hair and beard were curly, and yellow as corn-silk; his face fiery red, through incessant exposure to sun, and snow, and alkali dust; but his eyes were blue as the little *Lycaena* butterflies flitting in thousands over the blossoming prairie. Across his shoulder he balanced a heavy, double-barrelled rifle; his waist was girded by a red-white-and-blue cartridge-belt; from his boot-leg protruded the horn handle of a hunting-knife, and a six-shooter was strapped to the pommel of his saddle. He was dressed throughout in buckskin, from every seam of which depended a six-inch fringe of the same material. But his hat was a colorless *sombrero*, badly crushed.

This was "Mountain Harry" Yount and his horse "Texas." He was a professional hunter, with whom later I became well acquainted through months of companionship in hard work—a notable man, of a type almost as foreign to the Eastern States as is a native of Japan.

Yount's parents were Swiss, but he was born at Susquehanna, Pennsylvania, and so came by double right to his deep affection for the mountains. When

he was a child his father moved to Kansas, introducing the boy at an early age to pioneer life. But, wearying of the plains, when eighteen years old Harry joined an emigrant train, and pushed out to Pike's Peak, driving oxen. Gold-mining, however, was not his vocation; and, stimulated by his innate passion for the freedom of unfenced nature, Yount quickly abandoned the rocker for the rifle, beginning the wild and lonely career he has since led. At that time such a life was far more lonely than at present, notwithstanding that he was able to get his game much nearer to the main settlements than is now possible. Yet the towns twenty-five years ago were far between, and wanderers among the snowy ranges or interior parks very few. Harry hunted principally in the Medicine Bow range, the lofty crests of which are about the only peaks of the Rocky Mountains the traveller on the Union Pacific Railway catches a glimpse of after Cheyenne has been left an hour behind. Here roamed the mountain buffalo, the broad-antlered wapiti, the agile black-tail, the shy, covert-loving Virginia deer; every valley was haunted by antelopes, and all the crags were homes of the mountain sheep. Where there was so much tender flesh of course many beasts of prey were present—Harry once unexpectedly stepped into a convention of seven grizzlies—and hard experience with these creatures added deliberate courage to the skill learned from seeking wary deer and trapping the small, shrewd game whose furry coats were coveted. To find out all the passes and game-trails through these unknown mountains—all the resources of living alone anywhere, and at any season; to elude

or conciliate the Indians, all of whom were to be dreaded; and, most of all, to become thoroughly acquainted with the distribution and habits of the animals and birds, was the task before this young hunter, and one looked forward to with eager pleasure.

He was armed with stout hands, keen powers of observation, and strong enthusiasm. Never killing for sport, all his energies were directed toward making every grain of his costly ammunition yield a profitable return. He shot buffaloes for their robes, and what meat he could send a wagon after from the nearest mining camp, many a time slaughtering a whole herd by keeping himself concealed while he shot them one after another, or by riding them down in a long chase on Texas's back. Antelopes he hunted for the sake of the flesh. They were abundant on the plains everywhere, and his method was to drive a span of mules and a wagon to some point and hunt in a circle around it, killing a load, and then driving back. There is far more skill than appears in this kind of work. He once shot seventy antelopes in one day, in a match with a crack shot from the East, who was mightily skilful in scoring bull's-eyes, but found hitting a nimble prong-horn an entirely different matter. Difficult as this feat was, and much credit as it reflected upon him, Harry was always ashamed of it. It went against his heart to kill so many innocent creatures for only the glory of marksmanship.

Harry was (and *is*, for he still lives in the West, as game warden of Yellowstone Park—and here's to you, old fellow!) a quiet, simple-hearted man among

a generation of ruffians fortunately growing less. Constantly supplying the workmen along the new trans-continental railways with meat, he never joined those orgies that used to characterize their hours of of leisure, or took part in the series of bloody quarrels that never ended so long as any combatants were alive. By nature a gentleman, under his sinewy frame and tireless strength there glows a heart which hates cruelty. His eye is open to every beautiful feature of the grand world in which he lives—his heart is alive to all the gentle influences of the original wilderness. Having been much alone, he is timid in new society, reticent, thoughtful, and given to framing fanciful theories to account for such phenomena as he does not comprehend.

What stories he could tell round a camp-fire at night, when dinner was over, the big blaze had been built, and the pipes lit! I had many a discussion with him concerning points in natural history, wherein he opposed life-long experience to the statements of the books in not a few instances. He has read much, particularly about the West, and written somewhat for newspapers, even indulging in rhyme now and then. A handsome man, but holding in great contempt the long-haired fops of the plains who ape the style (because they can not rise to the heroism or skill) of Kit Carson or Buffalo Bill, Harry is as vain as a girl about his personal appearance. His belt, holster, knife-sheath, bridle, and saddle are all set off with a barbaric glitter. I have known him to pay seventy-five dollars to a Shoshoné squaw for the adornment of a single buck-skin jacket, which was a marvel of fringes, fur-

trimming, and intricate embroidery of beads. Yet his is not a peacock-like, strutting vanity, but a simple, genuine delight in bright colors and pretty things. He laughs quietly at it himself, but says he likes it. And why shouldn't he dress as suits him?

"Mountain Harry" could on no account be induced to leave his beloved hills. He is happy as a man on broad estates—indeed, he feels that he owns such, as, in truth, he does, to all purposes. He has an idea that he belongs there, and that those rough and desolate slopes, those mighty cañons and towery walls of lichen-stained rock, those forests hiding the sources of mighty rivers, those white peaks striking up into the azure, would miss him and grieve for him, as he would for them, if once he got beyond the invigorating chill of their snow-banks and the resinous fragrance of their pines. It is such a character as his that Thoreau addressed:

"O man of wild habits,
Partridges and rabbits,
Who hast no cares,
Only to set snares;
Who liv'st all alone
Close to the bone,
And where life is sweetest
Constantly eatest!"

* * * * * *

My first year's campaign taught me some points in camp-life which would have lessened the hardship, if known earlier, information upon which may prove useful to some future wanderer.

Anyone, for instance, who is of the opinion that it is not hard work to ride on mule-back in the Rocky Mountains an average of twenty miles a day for three months, is respectfully referred to practical ex-

perience for an answer. It is noteworthy, though, that the wisest entertains widely different views on the point of hardship at 6 A. M. and 6 P. M. At sunrise breakfast is over, the mules and everybody else have been good-natured, and you feel the glory of mere existence as you vault into your saddle and break into a gallop. Not that this or that particular day is so different from other pleasant mornings, but all that we call *the weather* is constituted in the most perfect proportions. The air is "nimble and sweet," and you ride gayly across meadows, through sunny woods of pine and aspen, and between granite knolls that are piled up in the most noble and romantic proportions. But later you toil up a mountain thousands of feet high, tramp your weary way through the snow and loose rocks heaped upon its summit, "observe," and get laboriously down again; or search through forty ledges and swing a ceaseless hammer in collecting fossils; or march all day under a blazing sun, or in the teeth of a dusty gale, munching only a sandwich as you plod along—till gradually your "glory of existence" oozes away, and the most dismal reflections arise to keep company with your strained muscles. How welcome after that is the evening bivouac, when there is rest for the aching limbs, and no longer need to tighten the belt! The busy hour between the end of the march and sitting down to dinner quickly passes, and the meal is not hurried; after that, leisure and the solid comfort of camping.

It is astonishing how greatly recuperated one feels after half an hour's rest and his dinner, following the most tremendous exertions all day. Sometimes

it seems, when camp is reached, that one has hardly strength to make another move; but after dinner one finds himself able and willing to do a great deal. This, as I have already said, is the hour for exploring the neighborhood, preparatory to next day's work; for investigating the natural history of the locality, or putting up the specimens accumulated during the day; for mending harness and arms and clothes, and writing memoranda, or perchance letters, against a possible opportunity to send them out to the civilized world by some Indian or friendly trapper. But the most important work is the making of your bed. It is the one thing in this wandering life that you cannot afford to neglect, and which, *if* neglected, is the cause of more hardship, distress, and possible illness than any other one thing which it is possible to guard against. Nevertheless, unless the camp is to be fixed in that spot for several days, it is not usual to put up the tents, except when the weather is stormy.

These tents are of the army pattern known as "dog-tents"—just large enough for two persons to stretch themselves out, side by side, but not more than three feet high, even under the ridge. The canvas is of good quality, however, and will stand a severe rainfall without wetting through, so long as the inside of the cloth is not touched. If the precaution is taken to dig a ditch around the tent, so that the water will run away and not spread underneath the edges, making pools on the floor, you will find yourself secure from all storms. But, as a rule, one doesn't bother to put up a tent.

No matter how firmly resolved you may be upon roughing it, you soon find that it pays to keep your

bed dry and warm, and to spend all needed time in making it up. Hardship enough will be inevitable; needless exposure is foolish. The proper supplies in the way of bedding consist of the following articles: a piece of moderately heavy canvas-ducking, waterproofed, fourteen feet long by four feet wide; a buffalo-robe, trimmed into a rectangular piece sufficient to lie at full length upon; two pairs of thick California blankets, and a small pillow. This appears to be the list settled upon by the best experience. All are light and warm, and can be rolled up inside the canvas and strapped into a cylindrical bundle, so compact as easily to be carried in one hand, and so tight that it may be rained upon all day and not be wetted through. The California blankets are expensive, but it is better economy to buy them. A pillow is a great comfort; lacking it, one finds a fair substitute in his boots, saddle, warbag, or even in a piece of wood. A thick night-cap is more convenient than your broad-brimmed hat to sleep in; and nothing warms chilled feet so much in bed as dry woolen socks, which may be kicked off later in the night.

At every opportunity air the bedding thoroughly in the sunshine. Then, before the evening dew comes, stretch out your long piece of canvas, lay the buffalo-robe smoothly on the upper end, double your blankets, and place them one over the other upon the robe. After smoothing out every wrinkle, the two blankets together are evenly folded once over lengthwise, the remainder of the canvas (seven feet) is drawn up over the foot, so that the toes cannot push through, and the bed is made. You have a

canvas, buffalo-robe, and four thicknesses of blanket under you, and (except the robe) the same over you, the blankets passing full thickness behind your back, which you will learn to place to windward. Then you fully undress, put your rifle, revolver and clothes under the flap of the canvas cover, to keep the frost off, slide gently into your rough, clinging blankets, pull the edges together in front, jerk the canvas over your ears, and—pleasant dreams to you!

Such is scientific bed-making; but there are niceties. It is important, for example, that the surface you lie on shall be, not soft—that is a little matter— but level; sloping neither toward one side nor from head to foot. Unless you are sure about this you will slide out of bed in some direction. Common-sense would tell you to clear all stones and nodules away (though sometimes this is impossible); but only experience, or a wise friend, will teach the camper that his rest will be tenfold better if he digs a depression underneath his bed where his hips come. The reason why persons become so stiff who pass an accidental night on the floor, or on a railway bench, is mainly because they have had no support for the spine, such as the yielding bed affords; all night long many muscles have had to keep on duty, bearing up the less prominent parts of the body. The spring of a mattress cannot be found in the ground, but it can be imitated by sinking the hips until the small of the back also rests upon the earth. Always dig a hole under your bed.

If you are in fear of the cold (frequently an altitude is attained for which the bedding sufficient below is an inadequate protection, particularly if a heavy

wind is blowing or the snow is flying), a good plan is to fold your blankets, turn up the bottom as usual, and then stitch the whole together into a bag. Another way is not to erect your tent, which is little or no protection against cold, but to spread it over you and peg it down, or pile enough rocks around the edges to keep it from blowing away. The former plan I tried in 1877, with great success; but it was the hardest work in the world to get into my bag, which was just large enough and no larger. I had to insinuate my body as gently as a surgeon probes a wound, in order to keep the blankets from drawing out of shape before I was inside. When once I had wriggled in, how snug it was! I could not turn over without rolling the larger part of my bedding with me. Yet those very same nights, away up on the bald brow of a lonesome peak, when every man piled on as many extra canvas *mantas* and buffalo-robes as he could find, the mosquitoes were so thick that we had to build miniature tents of netting over our half-frozen heads to get any sleep at all. It was the most startling conjunction of Winter and Summer, zero and insects, that I ever heard of.

But at such altitudes one must expect often to find it very cold at night, even in midsummer. Often, down in the San Juan country, near the head-waters of the Rio Grande, we woke up to find the canvas over us frozen as stiff as sheet iron. When one rises under those circumstances he gets into his frosty trousers with considerable celerity.

* * * * * *

After sunset the air in these high, Western regions grows rapidly cool, and a chill air from the snow-

banks seems to settle down and take possession of the warm nooks where the sunbeams have been playing all day. Now the long-caped, blue cavalry overcoats (bought in Denver or Cheyenne for three dollars apiece) are unstrapped from behind the saddles, fresh wood is piled upon the fire, the pipes are newly filled, and the circling smoke, exploring the recesses of the dark tree-tops, looks down on an exceedingly contented company.

Then, as the fragrant herb glows in the pipe-bowl, and the darkness shuts in the fire and the little circle about it from the great Without, tongues are unloosed, and the treasures of memory are drawn upon to enliven the hour. All these mountain-men are great talkers, and most of them tell a story in a very vivid way—a way purely their own, sounding barbarous to other ears, so full is it of slang, local phrases, and profanity, but in a language perfectly understood and with a wit keenly appreciated by kindred listeners. Tales of Indian warfare and border ruffianism in the old days of the emigrant trail, the founding of the Mormon settlements, the track-laying of the Pacific railway, and the gold discoveries; stories of the road agents—robbers of the mails and expresses—who never let a man out of the country with any money, and of the scarcely preferable vigilantes who sought to rid the mountains of these human wolves, only to learn that the persons most trusted in their councils were the ringleaders of crime. Between the road agents and the vigilantes no man was safe; the former might kill him to get him out of the way, the latter might hang him on the single charge that the ruffians let him alone.

But the theme of all themes which is never neglected, and which lasts clear through the trip, is *the mule.*

The mountain mule is a perpetual study. No animal in the world possesses so much individuality and will develop in a given time so many distinct phases of character. His sagacity in some directions is balanced by most desperate stupidity in others. A herd shows a wide range of variations in tractability and in other traits among its members. You cannot fail to note this in their different countenances, to which the long ears lend so much expression; but all their characteristics are positive, and are asserted in the most startling manner. They are crotchety, too, and it is often impossible to overcome their prejudices. One I knew who would never allow himself to be caught to have his pack put on or readjusted until all the rest had been attended to; then he was quite ready and docile. Another was a good, gentle riding animal, and had no objection to your pipe, but you must get off to light it; strike a match in the saddle, and Satan entered into his breast on the instant. The same fellow had an insuperable objection to entering water—an unfortunate trait, for before crossing an unknown stream with a pack-train it is desirable to know what sort of a ford it is, and the man who rode this mule was the one whose duty it generally was to make the test. The animal would walk straight down to the margin, then rear upon his hind-legs and spin round like a flash.

I had a mule once that would bray ferociously and incessantly whenever it was out of hearing of the train's bell. It was an excessively annoying habit, and, persuasion failing, I one day dug my spurs

into its ribs, and hammered its head first with a strap, then with the butt of my pistol, every time the hideous voice was raised. I felt that there was no sense in the absurd practice, and I was bound to break it. But after an hour or two it was hard to keep my seat, for about once a minute the beast would duck its head and jump as though propelled from a cannon, uttering a terrible bray, apparently just to invite punishment. So I changed my tactics, and paid no attention whatever to the habit, and in a couple of days had no further annoyance. Mules know what disturbs you, and malignantly do that one thing regardless of pain to themselves. Another mule I had was an examplar of this trait. He had a trick of swelling himself out when I put the saddle on, so that it was impossible to make the girth tight; I might as well have tried to draw in the waist of a steamboat boiler; and to secure the saddle properly I always had to catch him unawares, after we had got started.

It is not easy to gain a mule's confidence, and, on the other hand, he rarely merits yours. I have known one to carry his rider in the most exemplary manner for hundreds of miles, and then one morning begin a series of antics and develop an unruliness as uncomfortable as it was unexpected. Sometimes you can train them with considerable satisfaction, but you never feel quite sure of them. They are forever doing something surprising, heroically pulling through real difficulties to give up tamely before some sham obstacle. This is partly owing to their absurd timidity. If one scares, all the rest are panic-stricken. A piece of black wood, like the embers of an old fire, will cause almost any mule to shy. A bowlder of a cer-

tain shape was invariably regarded with distrust by one I used to ride. Rattlesnakes they hold in just abhorrence; bears paralyze them with terror; Indians they cannot be spurred to approach. This excessivxe timidity is the result of their social habits. A mule cannot bear to be left alone; and although he knows he can go straight back from wherever you may take him, following the trail like a hound, yet he considers himself hopelessly lost and forlorn when he can no longer hear the bell. It is his use and habit to go with it. It means everything which makes life happy for him, and he will endure very much punishment before forsaking it. However, two or three travelling together all day by themselves keep one another company and get along very well.

This attachment to the train, while it has been the salvation of many an outfit, becomes a great nuisance on the march. Mile after mile you plod along in the rear at a right-foot, left-foot, right-foot, left-foot jog, which in the course of seven or eight miles wears out muscles and patience. The sun beats down, the dust rises up, and your only entertainment is the cow-bell hung on the neck of the leader. The first hour you do not mind it much; the second, it grows wearisome; the third, painful, and you hold your ears to shut out the monotonous clangor; the fourth hour you go crazy. All life centres about that tireless hammering and endless conning, till, in unison with the ceaseless copper-clatter of that ding-dong bell, your mind loses itself in

"Hokey pokey winkey wang,
Linkum lankum muscodang;
The Injun swore that he would hang
The man that couldn't keep warm."

You cannot get away from it. What is misery to you is melody to the mule; and if you try to ride him outside of the music of the bell, he may, perhaps, be made to go, but it will be in such a protesting, halting, lame, and blind way, with such "uncertain steps and slow," turnings of reproachful eye and brayings of uplifted voice, that you will find it better to endure the evils of the pack-train than to attempt to escape from it. Of course, if you go clear away, out of sight and sound, the beast is obliged to content himself; but on the march this is not always pleasant or practicable.

But a diverson awaits. It is afternoon. Everybody is dozing. The distant line of trees which marks the day's destination is in sight, and the mules have been well-behaved all day. Plodding along in front of you at a rapid walk, very demurely, heads down, eyes half-closed, ears monotonously wagging, you think they have forgotten all their pranks, abandoned all intentions of wickedness concocted in the restful leisure of the early morning, and you fall into admiring contemplation of their exceeding docility and sweetness. Meanwhile the aparejo and load of a certain little buckskin-hued Cayuse mule have been slipping backward, and he, knowing it, has made no sign, but has quietly wriggled and swelled himself until he has got far enough through the sinch to try his experiment. With the suddenness and agility of a grasshopper he now gives a tremendous leap toward one side, bucks high in the air a dozen times in as many seconds, dancing about and kicking, stands straight up on his hind-legs, and falls over backward; next he squirms rapid-

ly through the loosened girths until he can bring his heels to bear, and kicks boxes, bags, and bundles until the saddle slips down over his legs and confines them like a handcuff. Then he rolls over and quietly nibbles the grass within reach, waiting, in the most exasperating unconcern, until you shall come and release him.

It will readily be understood that an Eastern man finds the tricks and treachery, lively heels, and diabolical disposition of the mule a constant check upon the enjoyment of Western work and wandering. The mule-packers are the most desperately profane men I have ever met; they exhibit a real genius in "good mouth-filling oaths." Considering the vexation to which they are subjected, and which they must not otherwise retaliate, lest they should injure the precious endurance and carrying power upon which their lives depend, and which make mules far more valuable than horses for mountain service, it is not surprising. And though these strong and agile animals will stand for hours when the bridle-rein of one is merely thrown over the ear of his neighbor, under the delusion that they are securely fastened, they are very wise and cunning, and can doubtless talk among themselves; but it is an unfortunate fact that their wisdom is all exerted for wickedness, and their conversation used chiefly in plotting combined mischief. And it is my honest and serious opinion, founded upon much observation, that so long as any considerable numbers of mules are employed there, it is utterly useless for missionaries to go to the Rocky Mountains.

The last pipe smoked, the longest story heard out, such slumber follows as defies any ordinary disturb-

ance to break in upon. With complete composure you sleep through a steady rain falling on the piece of canvas laid over your face, or in momentary expectation of being surprised by Indians. I have heard of a few camps in the old days having been run over by a stampede of buffaloes now and then; but this, fortunately, was rare. Now few worse interruptions of this sort occur to rest than the tramping among the sleepers of mules, in their attempt to make some felonious attack upon the edible portion of the cargo; and this only occurs where pasturage is scant. Once, camping near a Mexican pack-train of donkeys, we were thus greatly annoyed by those little brutes.

Now and then, on the plains, coyotes venture close to camp, and, if they are very hungry, even come to the fireside in search of meat, and perhaps attempt to gnaw the straps off the saddle or boot your weary head reclines upon. Foiled in this, they adjourn to a respectful distance and set up prolonged and lugubrious howls, which either keep you awake altogether or attune your dreams to some horrible theme. Perhaps I ought not to use the plural, since one coyote's voice is capable of noise enough to simulate a whole pack. No doubt it often happens that when a score seem howling in shrill concert there is really but a single wolf raining his quick-repeated and varied cries upon our unwilling ears. These small wolves are justly despised by all Western men; but the big gray wolves are a different matter.

While cougars and wolves and coyotes, and even Mexican *burros*, are rare infringers on the sacred privacy of your sleep, numerous "small deer" come to investigate the curious stranger who has stretched

himself out in their domain. Rattlesnakes are extremely numerous over many parts of the West, and we used to fear that, with their love of warmth, they would seek the shelter of our bedding to escape the chill of the night; but I do not know of any such an unpleasant bed-fellow having been found by any of the Survey people. I myself came pretty near to it, however, over on Cochetopa Creek, in Colorado, one night, when I unwittingly spread my blankets over a small hole in the ground. I snoozed on, unmindful of danger; but when I moved my bed in the morning out from the hole crawled a huge rattler, whose doorway I had stopped up all night. He would better have stayed in, for big John of Oregon caught him by the tail and broke his stupid neck before he had time to throw himself into a coil of vantage for the strike.

If you camp in the woods you are certain of late visitors in the shape of mice and ubiquitous and squeaky ground-squirrels, whose nocturnal rambles lead them all over your bed-covers; often, indeed, their rapid, sharp-toed little feet scud across your cheek, and their furry tails trail athwart the bridge of your nose, brushing the dew from your sealed eyelids. To the thousand insects rustling in the grass we never gave attention; and not even the most home-bred tenderfoot ever *thought* of cotton in the ears! How thus could he hear all the pleasant, faint voices speaking through the night so close about him? Thoreau, writing from his camp on a sloping bank of the Merrimac, has well described the sounds of night:

"With our heads so low in the grass, we heard the river whirling and sucking, and lapsing downward,

kissing the shore as it went, sometimes rippling louder than usual, and again its mighty current making only a slight, limpid, trickling sound, as if our water-pail had sprung a leak and the water was flowing into the grass by our side. The wind, rustling the oaks and hazels, impressed us like a wakeful and inconsiderate person up at midnight, moving about, and putting things to rights, occasionally stirring up whole drawers full of leaves at a puff. There seemed to be a great haste and preparation throughout Nature, as for a distinguished visitor; all her aisles had to be swept in a night by a thousand hand-maidens, and a thousand pots to be boiled for the next day's feasting—such a whispering bustle, as if ten thousand fairies made their fingers fly, silently sewing at the new carpet with which the earth was to be clothed, and the new drapery which was to adorn the trees. And the wind would lull and die away, and we, like it, fell asleep again."

But I am dwelling too long upon this rare wakefulness in camp, rather than the ordinary and business-like repose of the night. One's sleep in the crisp air, after the fatigues of the hard day, is sound and serene. But the morning! Ah, that is the time that tries men's souls! In *this* land one would find it very unpleasantly cold to be with her when

"Jocund day stands tiptoe on the misty mountain top."

You awake at daylight a little chilly, readjust your blankets, and want again to sleep. The sun may pour forth from the "golden window of the east" and flood the world with limpid light; the stars may pale

and the jet of the midnight sky be diluted to that deep and perfect morning blue into which you gaze to unmeasured depths; the air may become a pervading champagne, dry and delicate, every draught of which tingles the lungs and spurs the blood along the veins with joyous speed; the landscape may woo the eyes with airy undulations of prairie or snow-pointed pinnacles lifted sharply against the azure—yet sleep chains you. That very quality of the atmosphere which contributes to all this beauty and makes it so delicious to be awake makes it equally blessed to slumber.

Odds and Ends of Camp Wisdom

THE man who cannot take things philosophically in camp had better stay at home and sit in the parlor.

When you are resting, *rest*. Make a business of it. Throw all care and worry, of either home or camp life, off your mind. Do nothing, say nothing, think nothing, be nothing. Recuperate.

Provisions may be left to the last, but all other purchases should have been completed days before. Allow ample time for every preparation. Do not fly around town the last morning like a decapitated hen. You will find enough to annoy one in camp; and you should start out as calmly and quietly as you go down to your business.

If you are camping in deep woods, you need have little fear of anything being stolen when your camp is unprotected. Strangers, in passing, generally respect what is called the "law of the woods." And if a straggling hunter should help himself out of your

abundance, he will be likely to take only enough for immediate need. But look out for the red squirrels and the moose-birds—both persistent robbers.

Examine your lists carefully and strike out everything you think you can get along without. Simplicity should be your constant aim. Dispense with all the requirements of city life as far as possible. If you are inexperienced, you probably will find after one or two seasons out that, of the articles you took with you into the woods the first time, you could have left two-thirds at home and still have been very well provided.

Be sure you take with you a large stock of patience and good-nature. Camping-out tests the character. A good camper accommodates himself to circumstances, and is too much of a philosopher to condescend to quarrel. Make no rules, if you can avoid it, and break none that are made. If you are appointed a leader, shift the office upon the shoulders of another man if you can; and if not, then govern by tact and quiet influence, rather than by arbitrary regulations.

Select a *cheerful* and *dry* spot for pitching your tent. Choose even ground, and slightly sloping. If you expect to remain in camp any length of time, dig (or cut with a hatchet) a small trench around your tent. This will prevent the water from higher ground running into your inclosure. If the trees are too thick, make an opening so as to let in the sunshine. Do not thoughtlessly cut down more trees than necessary. In most cases it will be found

easier to discover a sufficiently open spot than to attempt to make one.

A "smudge" is a small, smoky fire made for driving away insects. It must have little fire and *plenty* of smoke. See that it is put entirely out when you are through with it, and in all cases be careful not to set fire to the woods. Often immense damage is done by campers in this way. Where the soil is partly made up of vegetable matter, a small fire frequently works a long distance along the ground before it so breaks out as to be perceptible.

It has been well said that the genuine camper divides the year by the 1st of January. Up to that time his talk is all about the last camp he had, and after that it is all of the next camp. The old adage, "Seize time by the forelock, for he is bald behind," applies as well to pleasure as to business. Double is the enjoyment to the lover of woodland life if he knows weeks ahead just when, and just where, he is going to spend his vacation. Nor can he too early in the season look over and perfect his kit. Many an hour's dearly-bought pleasure has been marred by simply not preparing in time. Make out a full inventory of all you have on hand that you may need for the next vacation. Put down everything; not only usual cooking utensils, clothing, tent, and fishing-tackle, but also the little odds and ends of things, such as a chain, a hook, a piece of wire, etc. Often these little trifles prove a most valuable part of your inventory. Put down each article in a line by itself. Do not jumble three or four items together. Hav-

ing completed your inventory, make out a supplementary inventory of all those things which past experience has taught you the necessity of, or which you think you require, and you have not already on your list. Leave nothing to memory; put every article down. Next, read everything you can find referring to camping; and especially is this important if you are a novice, for good camping is an art to be acquired only by experience and careful attention to every detail. One man will have twice the comfort, twice the pleasure, and at one-half the expense, that another man will, simply by knowing how to camp. As you read, make notes, and add to your supplementary inventory such articles as you find you have overlooked.

The following observations should be borne in mind: No two campers are likely to cook the same thing in exactly the same way. Each camper is positive that his way is the best. Whoever is cook for the time being must quietly pursue his own way with good-natured persistence. If you are not cook, let the cook alone—and attend to your own business. It is excessively annoying while cooking in the open air to have persons around watching, suggesting, and criticising. The responsibility of getting up a dinner for a set of hungry people is in itself sufficient, without any additional perplexities. The cook should always have an abundance of fuel close at hand, both large and small sticks. The one who cooks should never be compelled to collect fire-wood. He must be able to give his whole undivided attention to his special duty.

Be kind to the woods-folks around your camp—the birds and the mammals, both. Remember that the forest was made especially for them, and that, therefore, they are your natural hosts. So be their guest, in all that the term implies; don't be an unwelcome and ill-bred intruder. You will find that virtually all of them are quite willing to be friendly, once they see that you are of that mind; and this they will be very quick to detect. Don't tempt the moose-birds (Canada jays) and the red squirrels to *steal* your grub by being stingy with it. You can easily prevent them from getting at what you really need, and you are missing half the fun of being in the woods unless you can appreciate the joke of having a moose-bird swoop down the instant your back is turned and steal a bit of bacon or a mouthful of beans off your plate. He is a poor apology for a camper and had better have stayed out of the woods altogether, who will not gladly give up half of his daily ration of bread or crackers for the satisfaction of having a bird or squirrel come up fearlessly and take food out of his hand. What's the use of being *in* the woods unless you are *of* the woods?

The Camper's Home Library

A CHECK-LIST OF SUGGESTIONS

Bates, F. A.—Camping and Camp Cooking. Boston: The Ball Publishing Co.

Bradford, C.—The Angler's Secret. New York: G. P. Putnam's Sons.

——The Determined Angler. The same.

Breck, E.—The Way of the Woods. New York: G. P. Putnam's Sons.

——Wilderness Pets. The same.

Camp, S. G.—Backwoods Medicine and Surgery. New York: The Outing Publishing Co.

Cronau, R.—Our Wasteful Nation. New York: Mitchell Kennerley.

Edwards, C. E. and Dyche, L. L.—Camp-Fires of a Naturalist. New York: D. Appleton and Co.

Gibson, W. H.—Camp Life in the Woods and the Tricks of Trapping and Trap Making. New York: Harper and Bros.

Goode, G. B.—American Fishes. New York: Forest and Stream Publishing Co.

Gray, W. C.—Camp-Fire Musings. New York: F. H. Revell Co.

Harvey, A. K. P.—In the Glow of the Camp-Fire. Boston: The National Sportsman Press.
Henshall, J. A.—Book of the Black Bass. Cincinnati: Robert Clarke Co.
——Camping and Cruising in Florida. The same.
——Ye Gods and Little Fishes. The same.
Hornaday, W. T.—The American Natural History. New York: Charles Scribner's Sons.
——Camp-Fires in the Canadian Rockies. The same.
Huntington, D.—Our Big Game. New York: Charles Scribner's Sons.
——Our Feathered Game. The same.
Ingersoll, E.—Knocking Round the Rockies. New York: Harper and Bros.
——The Life of Animals—The Mammals. New York: The Macmillan Co.
——Nature's Calendar. New York: Harper and Bros.
——Wild Neighbors. New York: The Macmillan Co.
——The Wit of the Wild. New York: Harper and Bros.
Inman, H.—Tales of the Trail. Topeka: Crane & Co.
Kephart, H.—The Book of Camping and Woodcraft. New York: The Outing Publishing Co.
——Camp Cookery. The same.
Mather, F.—Men I Have Fished With. New York: Forest and Stream Publishing Co.
Mills, E. A.—The Spell of the Rockies. Boston: Houghton, Mifflin and Co.
——Wild Life in the Rockies. The same.
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"Nessmuk" (G. W. Sears)—Woodcraft. New York: Forest and Stream Publishing Co.

Newkirk, N.—Doc an' Jim an' Me. Boston: The National Sportsman.

——One Injun and Three to Carry. The same.

Pinchot, G.—Primer of Forestry (2 vols.). Washington: U. S. Forestry Bureau.

Rhead, L. (Ed.)—The Speckled Brook Trout. New York: Harper and Bros.

Robinson, R. E.—Uncle Lisha's Shop. New York: Forest and Stream Publishing Co.

——Uncle Lisha's Outing. The same.

Roosevelt, T.—The Wilderness Hunter. New York: G. P. Putnam's Sons.

Selous, F. C.—Sport and Travel. New York: Longmans, Green and Co.

Tennant, J. A.—The Photo-Miniature. A series of monthly monographs. New York: Tennant and Ward.

Van Dyke, T. S.—The Still Hunter. Garden City: Doubleday, Page and Co.

Wallace, D.—The Long Labrador Trail. New York: The Outing Publishing Co.

——The Lure of the Labrador Wild. The same.

White, S. E.—Camp and Trail. New York: The Outing Publishing Co.

——The Forest. Garden City: Doubleday, Page and Co.

——The Mountains. The same.

Wright, W. H.—The Black Bear. New York: Charles Scribner's Sons.

——The Grizzly Bear. The same.

Trade Notes

Many a man goes into the woods with a camp outfit second to none, and with a stock of camp lore that excites the admiration and envy of his friends. But he cannot take pictures; and goes back to his home with a lot of negatives that do anything but justice to the scenes and incidents of his camp life.

The primary reason is because he cannot determine the proper exposure under all circumstances. Instruments called "exposure meters" have been devised to carry the amateur over the stumbling block. One principle that has been much employed has been to obtain the exposure time by tinting a sensitive piece of photographic paper and calculating the time required.

A better principle has now been put into practice. It was discovered by a German and involves a method of exposure calculation that is perfectly simple, thoroughly accurate, and unaffected by atmospheric changes. This meter doesn't get out of order, and

with it you have always ready an absolutely true exposure guide. This meter is known as the "Heyder Blue Prism Exposure Meter"; and further particulars regarding it may be had by writing the sole American importers, Herbert & Huesgen, No. 311 Madison Avenue, New York City.

German thoroughness has become almost a by-word. In more recent times this thoroughness has been especially exemplified in the fields of science and business. Among German manufactured products there is perhaps none that better exhibits the extreme care so typical of the German mind than the Sauer-Mauser rifle, manufactured by Messrs. J. P. Sauer & Son, and sold in this country exclusively by Schoverling, Daly & Gales. Beauty of design, balance, strength, and finish particularly characterize these rifles. The appearance of this arm is markedly attractive, the stock being finished in what is known as dull-oil London finish, and the bluing employed on the metal parts being of a rich semi-transparent shade.

It is impossible here to describe the Sauer-Mauser rifle in detail, but we may mention as distinctly worthy of note the firing mechanism and the magazine. In the magazine five shots may be carried in addition to the one in the chamber. This magazine is of what is known as the "double-column" type, in which the cartridges are carried side by side; the one which is to be pushed into the chamber being somewhat higher than the one next to it. The firing mechanism is simple and effective. The main feature is a bolt containing the firing pin and the main-

spring. This bolt is operated by a handle on the side and moves backward and forward in the operations of inserting a fresh cartridge, cocking the mainspring, and extracting the fired cartridge. The bolt is retained in the closed position by two strong lugs on the forward end. At the rear end of the bolt is an additional lug which assists in taking up the strain of the explosion.

Those who desire to investigate this arm further should apply for a special catalogue to Messrs. Schoverling, Daly & Gales, at No. 302 Broadway, New York; or better yet, visit their well-appointed shop for a demonstration of its qualities.

A .22 rifle will help to pass many an hour in permanent camp. For target practice it is extremely handy and by its use you may develop your shooting ability with larger arms. During the open season, it is ideal for certain smaller game.

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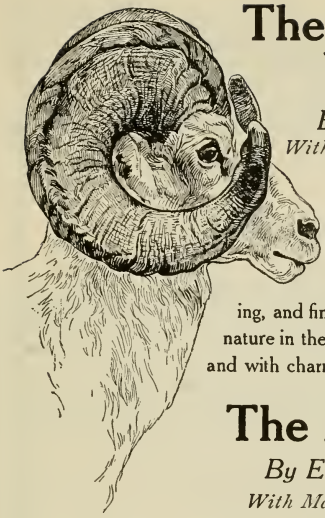

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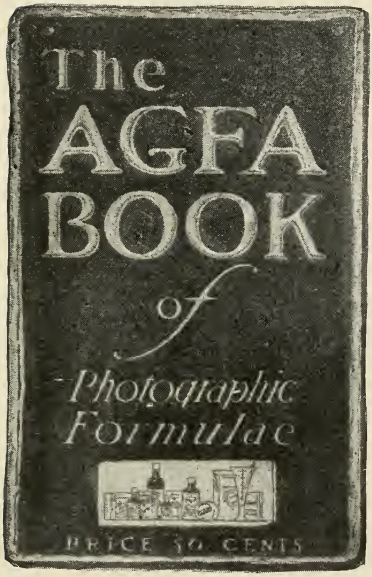

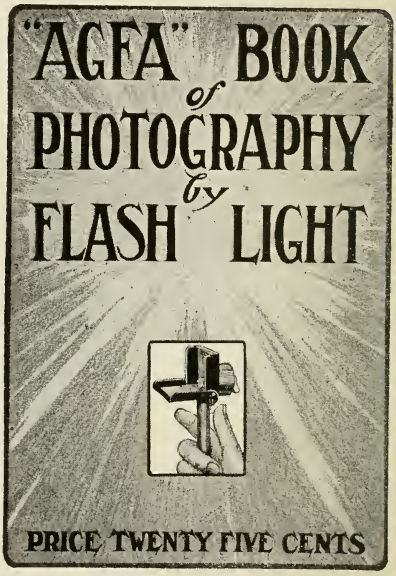

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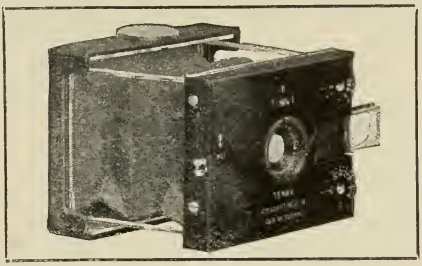

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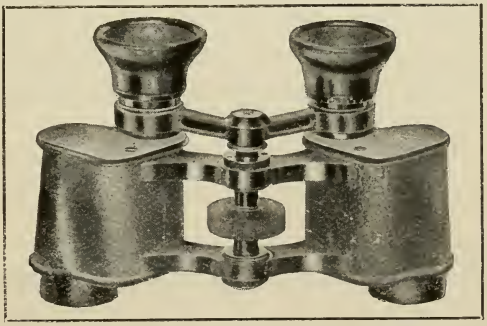

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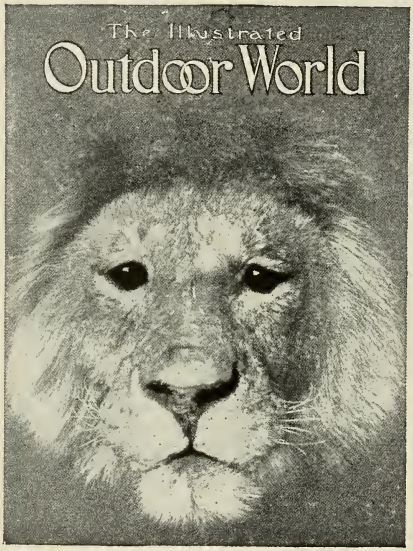

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