THE COMPLETE ANGLER AND HUNTSMAN

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BY
THOMAS HUBERT HUTTON
AND
STANLEY BLAKE

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INTRODUCTORY

PART ONE

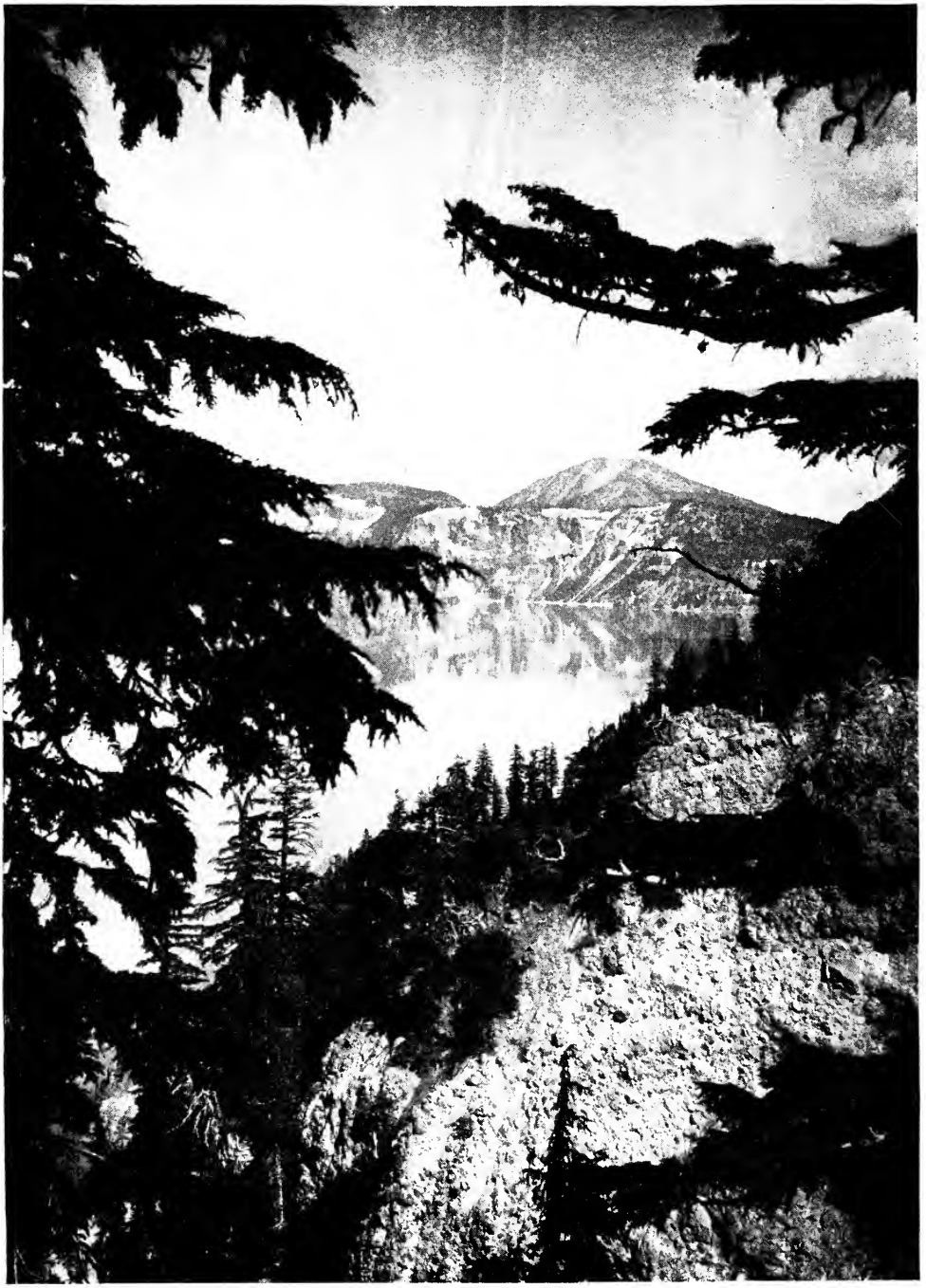
The author of Part One of this book was born and reared among the hills of Old Kentucky, and has always been a close student of nature—a lover of the outdoors, and, above all, an ardent angler—a true disciple of "Ike" Walton.

Thomas Hubert Hutton was born in the year 1892 at the country town of Berry, County of Harrison, State of Kentucky, where he still resides.

He has written for the leading outdoor magazines for many years, having penned over 500 magazine articles on various subjects, both of angling and hunting.

For several years he was associated with the Blue Grass Farm Kennels, of which Mr. Stanley Blake, author of Part Two of this book, is Manager, and enjoyed always the most pleasant relations with that gentleman. Mr. Hutton, at the time this book was published, held the position of Postmaster, at the town wherein he is a resident.

While his principal recreative sport is angling for the battling black bass, he also finds time occasionally to accompany his friends on a hunt.



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CRATER LAKE AND MT. SCOTT FROM TRAIL

PREFACE.

NATURE'S CALL.

There is instilled within each one of us a persistent something that we call "desire." There are various things to be desired—some desire one thing, some another; some have many and numerous desires, while others may have but few. It is a safe bet, however, that all of us experience one desire that we cannot get away from—namely the desire to respond to nature's persistent call.

This call cannot be evaded. It may be postponed, but it ever keeps on tugging at our heartstrings, and must be finally answered. For a time, nature's call may be neglected, forgotten in the busy struggle along life's tempestuous way, but the call will return again and again, and must be responded to.

There is a something within each of us—a desire—to commune with nature; no matter where we live, or what our calling. The city-bred man especially has a constant yearning to get out and away from all the noise and bustle and strife for a quiet vacation-time among the hills and along the cool streams, there to try his skill and pit his knowledge and resourcefulness against nature's own, while those living in the smaller centers of population and in the rural districts experience and answer the same call. All of us have this great desire, and fortunate indeed is the man who is able to answer the call promptly. A great army of would-be sportsmen, however, on account of their

business ties and for various other reasons, cannot explore the wonders of nature as soon as they would like to. They are none the less sportsmen, however, and keenly ardent ones at that, for their heart's in the right place and if they had their way about things their longing would soon be gratified, but ofttimes obstacles beset one's pathway and delay the realization of one's fondest hopes.

To this great army of sportsmen, as well as to the initiated, we have faith that this book will appeal; that it will open the doors which bar their vision of nature's sublime beauty; that it will in a small measure, at least, alleviate the suffering of those who would and cannot answer the call at the present time; and we hope—very humbly hope—it will be found both instructive and entertaining to all.

There are many kinds of sport, but in this book we have to do but with two classes, the angler and the hunter.

PART ONE

Angling.

To angle successfully is a fine art. It requires not only skill, but a great amount of patience. Without these prime requisites you are doomed to failure. Angling comes naturally to some fishermen, to others it must be taught, and, alas, to still others it cannot be taught.

So to be a successful angler, you must possess skill and patience. The student-fisherman who is most observant is by far most apt to speedily acquire the art. Study nature. Learn the habits of the finny tribe. Find out what they thrive upon—what insects they devour in certain seasons of the year, and imitate these insects in constructing your artificial lures, if it is not practicable to use natural ones. If you purchase your lures, use all the judgment you possess in selecting them.

The successful hunter knows the habits of the animal he is striving to bring to bag, and so must the successful fisherman know the habits of the particular specie of fish he is angling for.

No given set of rules may be set down for the guidance of the angler. Conditions vary in such great degree in different localities as to make given rules and regulations seem foolish. We must adjust ourselves and our tackle to conditions as we find them—this is the method that spells success. Hence, in this book the author shall not aim to write down any given set of rules in the art of angling, but merely to write of conditions as he has found them in his particular field of action.

While we have before us the subject of angling, perhaps it would not be amiss to offer a few general suggestions as to tackle.

Tackle is a most important item. Poor and indifferent tackle means, in most cases, failure. Of course, we, as a boy, caught our full share of fish on a crooked stick for a pole and a bent pin, but that is not our idea of art in

This Photograph by Courtesy the Canadian Pacific Railway Co.

"FISHING IN BRITISH COLUMBIA—A SCENE THAT WILL BRING BACK FOND RECOLLECTIONS OF OUR BOYHOOD DAYS.

the angling game. Most of that was pure blind luck, or else the fish were awfully hungry in those days. We are fully convinced that to really become an accomplished fisherman, wise to all the tricks of the finny tribe, one must have good, dependable tackle. Now, we don't mean by this that one should have extra heavy or very strong line and stout reel. No! No! Rather, we mean very light

tackle, but something a jot better than the crooked pole and the bent pin. In a word, tackle of light but good quality, that may be relied upon in a close place. We have in the angling world advocates of both light and heavy tackle. Recognizing the respective merits of both in given instances and under varied conditions, we prefer to use our judgment in our selection of tackle to meet these conditions as we find them, and recommend this course to fellow-fishermen.

The weight and length of rod is largely a matter of preference of the individual. However, a medium weight and a medium length rod will be found suitable for nearly all ordinary occasions, and, therefore, is most acceptable. The two extremes are necessary in some cases, but as a general thing the medium is to be desired.

The author uses a 5 1-2 foot rod, made of selected split bamboo, and constructed in two sections, having agate top and butt guide, between which it has high German Silver guides, and is an outfit that will suit the average fisherman. Some anglers, who hanker more for convenience in carrying a rod than for service to be obtained from it, prefer a three-jointed affair. Speaking about reels—the reel should be of good quality, an Anti-Back-Lash of the Heddon type, a Milam, a Meek, or Blue Grass; it should be free running and quadruple multiplying, with a narrow spool. The reels mentioned are fairly high in price, but in buying a reel, remember that quality counts most in this item of tackle, and that no matter how magnificent is the rod, the guides, the line, if you have not a good, free-running dependable reel, the outfit is "null and void" so far as service is to be obtained. There are many medium and low priced reels on the market, some few of which possess merit commensurate with their reasonable prices, but it takes real money to buy a quality reel that will last long and be a joy to your heart.

Then comes the subject of fishing lines. The writer

likes a braided silk line fifty yards long, for bait casting. Various and many are the lures to be found on the market today, and there is a lure for every clime and for every occasion, for all seasons and all places. Such being the case, the angler should purchase a set of lures that are adaptable to local conditions. The idea is to study the particular insect-life of the locality in which the angler resides—see what insects are common along the rivers and lakes in that

Courtesy Canadian Pacific Railway Co.

FISHING IN ONTARIO.

particular region—and then buy lures as nearly in conformity to them as possible. Imitate nature. By observation along the waters of your locality, you will, no doubt, be able to see what insects fly above the water, or float upon its surface, and by close attention you will be able to note what the fish leap after most frequently. Get flies that are as nearly like these real ones as you can. This course will bring success if wisely carried out.

As to dry-fly fishing, while it has been an art long practiced in Europe it is a sad commentary on our angling progress when we say that until recently dry-fly fishing in this country had not found popular favor. This is said to have been due to the fact that wet-fly fishing in our turbulent streams had met with so much success that new methods and new tackle were not needed or desired. Tie your dry-fly in exact imitation of the winged insects.

A Day With The Wily Black Bass:

Memory harks back to a day in early springtime when we journeyed forth in quest of the sport royal. With well-filled fly-book, as well as a few nice live minnows in our minnow-bucket, we stealthily crept to the old mill-dam before the rising sun had dared show golden rays over the eastern hilltops.

Oh, how bracing was the early morning air on the river! Put new life into a fellow. Made one's blood fairly tingle.

Soon, we were casting right and left, first trying the minnows. After thirty minutes casting with live bait without a strike, we decided to get out our brand-new fly-book and make an offering of choice specimens thereof to the old wily fighter of the mill-pond. Perhaps, if he was not really hungry, he would strike at an attractive lure through pure viciousness, for which he is noted in the realm of things aquatic.

Our surmise did not work out, at least not at first. The old stand-by, "Jock Scott," utterly failed in its mission; "Lord Baltimore" was also completely ignored by the sulking bass. We then tied on a "Royal Coachman" and awaited anxiously for results. Nothing doing. We were dismayed, but still determined—so we tried a "Grizzly King", and, casting well out, let it light gently upon the water with a slight jerk, reeling in rather hurriedly and

impatiently, (we had about lost all the patience we ever possessed), but it was just then we got a strike, a strike that indicated to us, as we gripped the rod, that the bass was trying (in baseball vernacular) to knock a "home-run." It was a regular Hans Wagner strike! Zip! went the line, or maybe it was the reel, maybe both—first thing we knew Mr. Bass was heading for midstream and he was one of those headstrong fellows that are not so easily turned. Presently, however, we did manage to start him on the return trip, and then he came on so fast it was a perfect job for us to keep him from getting slack line, which would have been fatal and would have assured his escape. On he came! Wind as hard as we could he did manage to get a little slack—he then came to the top and leaped clear of the water, shaking with all his might, trying to dislodge the hook. With a sharp jerk we took up the slack and brought him back into the water, reeling like mad. The moment he slid back into his element, he took another spell, this time going straight to bottom and there sulking. Nothing could seem to dislodge him. Seemed certain he had gone under a rock TO STAY. We felt our hopes sink. We were going to lose our prize-beauty. Not only that, but we'd probably lose our fly and a good leader, not to mention our temper.

After a lapse of several minutes, that seemed to lengthen into weeks of anguish, he came to life with a suddeness that fairly startled us. With a mighty surge he made for the bank on which we stood, and again we became intensely occupied with the reel. It seemed not to work nearly fast enough. That bass was sure speedy.

Approaching the bank, he must have spied his arch-enemy—man—for he gave a haughty swish of his tail and was gone again—to deep water.

We struggled again to turn him and for a time it seemed uncertain who would be the vanquished and victor. At last, we brought him to a halt and after a painful inter-

val his halt was turned into a retreat—once more he came toward land.

But he came leisurely. No slashing and slathering waters were kicked up by terrific swishes of his tail. Boys, he was tired out. He had fought the good fight—and lost.

Lures for The Black Bass:

It has become a proven fact that no one lure or set of lures can be depended upon to catch fish at any time in all weathers. Especially is this true of the wily black bass, which is a fish of moods. At certain times of the day a particular lure will prove to be a bass getter, and at the very same time on other days that particular lure will be of no avail; on certain days one lure will appeal, whereas on other days that lure will fail to attract. In cloudy weather a certain lure may be used to advantage, whereas on a sunshiny day it would not draw fish. So again at certain seasons of the year a particular lure gets bass, being no good at other times. Hence, it is but a short step to the conclusion that the bass is a fish of moods. Some days the black bass will feed right under your lure, while on other occasions he will savagely strike at anything you have to offer. We come to the conclusion, after giving the matter much thought, that there are several elements that enter into the problem. They are: The seasons, weather, (which controls the mood of the bass); the time of day; and the lure. This accounts for having good luck on a certain day with a certain lure, while the same lure the next day proves entirely inefficient.

A good many anglers object to the use of the treble hooks on baits, their opinion being that their use is inhumane and unsportsmanlike, while others prefer to fish with the fly, which has but one single hook. In some states the law prohibits the use of more than three hooks on one bait or one treble hook.

When one pauses to consider the cruelty of angling with live bait, the angler will then look with some degree of disfavor toward the method of casting or using live bait. On the other hand, live bait casting has charms all its own, and a great army of anglers swear by their live bait.

For those, however, that do not prefer live bait, there is to be found on the market lures of all kinds.

One writer remarks that the best thing about top water lures, especially the ones modelled after the minnows, is that they will not sink. If the angler or uninitiated fisherman gets a snarl or back lash he may take his own time in undoing it without fear of his bait sinking and finding a permanent (perhaps) resting place in a weed bed or among deep crevices or rocks. These lures (undoubtedly) that are classed as top water lures save the angler "gobs" of money in this respect.

With sinking baits it is the reverse. They are adapted to deep water trolling, but are cast also.

The best results are obtained by trolling in deep water. Slow trolling allows the bait a chance to sink deep besides giving the bass a better chance to strike at it.

Another favorite bait with the average angler is the plug. However, it is condemned by many men because of its nine hooks (three sets of trebles), but for those that are after results (bother the method) the plug is right there with the goods. It is best to troll it.

Finally, in fishing with artificial baits, one must realize that he is only using imitations of the real thing, and accordingly not place too great confidence in them, as their successful use depends largely on season, weather, the mood of the fish, skill of the angler, and the waters he is fishing.

Hints on Fly-Fishing for Trout:

First, secure a rod that "fits" you, that is, one that you can handle conveniently, either steel or split bamboo, as

you prefer, one not too supple and with plenty of power and resiliency. You don't have to have the highest-priced rod on the market, neither is it advisable to buy the cheapest. Buy one commensurate with your ability. Of course generally the higher priced rods are of better material and, therefore, last longer and give better service. It pays to buy good stuff, when it can be afforded. Try out the rod before you purchase it; see if you like it in every particular.

Next comes the reel. The same doctrine applies to the purchase of this important item as applies to the rod. Get as good quality as your purse permits. A cheap one will maybe be all right for a while but in the long run it pays to purchase good tackle.

Then comes the line, which should be silk, of sufficient weight to cast well in the wind and to fit the rod, one that will not strain the rod and yet not so light that it will fail to get the action out of the rod required. For a rod 9 1-2 feet long, weight 5 to 6 ounces, size E line is commonly used.

The selection of the leaders is of next importance. For rough streams use a heavy 3-foot leader, but on calm, shallow streams this will not do. A fine gut is an important part of the tackle, and the leader should be at least six feet in length if obtainable. Fine gut is sometimes hard to obtain, but should be used whenever procurable.

The kind of fly you use, while important, is not nearly so important as the manner of fishing it.

Sometimes, when trout are real hungry they will take most anything in the lure of dry flies, but at other times they appear to sulk and will bite at nothing, while sometimes a particularly fascinating lure will get their goat, and at still other times a dull drabby color will appeal to their taste. They seem to have moods, as well as fixed habits, and we have to study their moods as well as their set characteristics.

Lastly, when you get a rise, don't jerk the poor fish's head off; a simple turn of the wrist is sufficient, if you are expert at the game. You must learn to pull gently and at the same time firmly and quickly. This is acknowledged to be difficult and no suggestions that I can think of will teach you how to do it; it's an art that has to be acquired by actual practice.

Fishing Through The Ice:

Perhaps no wintertime sport affords any more pleasure to the angling brotherhood than the sport of ice-fishing.

An ice chisel and an axe, will serve the purpose of making a hole in the ice through which to fish.

Winter fishing has the advantage over fishing at other seasons in that it does not take so extensive or costly an outfit. Any simple rig-up will do.

On such trips it is well to take along a coffee-pot, or receptacle in which soup may be boiled, for there is nothing that makes an outer feel better and enjoy himself more on a cold winter day than a hot cup of coffee or a bowl of hot soup. The frying pan should also find a place in your outfit, for you will want to try some of the fish you will catch, and there is a sense of enjoyment in partaking of your catch "right on the spot" that is not found elsewhere.

This is a time of year when nature has clothed the landscape all about you with the snowy-whiteness of the beautiful snow, and if you loved to wander through these favorite haunts in the glad summertime when everything was green and growing, you will no less be enthralled now in mid-winter with the scene of beauty as it unfolds before you. Strange indeed, but true it is that tho' most all living things are asleep (some, alas! dead) at this season, there is presented to view a scene equally if not more beautiful than that presented in spring and summer and fall when

all nature is dressed in gala array in response to the glad sunshine and growing rains.

I have in mind a little outing spent with a friend one winter's day in which we fished for pike through the ice. Through 15 inches of solid ice we hewed a hole. The rougher part was accomplished with the axe, but as soon as the axe got through to the water beneath, I took the chisel and shaped up the opening as best I could.

Putting on a minnow, while my partner cut himself another hole not far distant, I lowered it about ten or fifteen feet beneath the surface and held it there. The end of my line, of course, was tied securely to a stick, but in all other ways it was nothing more than a hand-line, and really a hand-line it was indeed.

I now busied myself in gathering some wood for a fire, and soon had a cheerful blaze on the bank nearby, where it would be convenient to go and warm when we got chilled. A fire is an important item in ice-fishing, for usually along lakes the wind comes in pretty brisk and cold. Of course, if you are fishing far out from shore, the fire may be built on the ice at a respectable distance from where you are fishing. Some claim the warmth of the fire goes through to the water below and draws fish to that neighborhood. These preliminaries over, we cut other holes until we had six or eight cut and lines set.

In this manner we caught several good-sized pike. While this sort of fishing does not give one the opportunity to display his skill to any great degree it is, at least, a form of winter sport that helps to while away those long winter days when the angler feels that spring will never arrive, so that he may again rig up his favorite rod and reel and go forth to battle with a big muskie, a trout, a black bass, a pike or whatever species opportunity and location presents.

We returned home that night feeling greatly invigorated by the day's outing in the brisk winter air, and

many a time thereafter we repeated the operation, which made the whole year a fishing season—a condition we always thought should be evolved some way or other.

If live bait is unobtainable, we suggest using red flannel lures, which prove very effective for most species of fish.

No doubt, other artificial baits and lures may be employed with good success in ice-fishing, such as the dry fly, the fluted spoon, the wet fly, and other fancy artificial baits and lures.

ISAAK WALTON, BELOVED ANGLER AND PHILOSOPHER.

Isaak Walton, whose memory every knight of the rod and reel holds dear, was born at Stafford, County Stafford, in England, in August 1593. At the tender age of nineteen summers we find him in London engaged in retail shop-keeping. He was variously called a "linen-draper," "sempster," and "milliner." This business appears to have prospered.

However, it was not as a business man that Walton holds a claim to immortality, but as a writer of carefully worded literature both of an ecclesiastical and nature-loving flavor. Most important, as to the latter, was his book "The Compleat Angler," which he wrote after his retirement from business in 1643. He purchased a place near his "native heath" in the vicinity of good fishing. Walton was twice married—once in 1626 and again in 1646, losing both wives by death. His book, to which possibly he owes the major portion of his immortal fame, "The Compleat Angler," was published in 1653. Successive editions were put out in 1655, 1661, 1668 and in 1676—the latter being the last edition put out during the lifetime of the author.

While the book belies its name of being really "com-

plete" for our day and age, it was probably "complete" for the needs of the troublous times of Oliver Cromwell, in which Walton lived. This book was written in the form of a dialogue between Piscator and Venator, the former representing the master angler and philosopher, the latter his apt and willing scholar or pupil.

In order to convey to the reader the full measure of Walton's matchless art in his description of things natural, it is best that we include excerpts from his book, "The Compleat Angler," as follows:

Piscator—O sir, doubt not that angling is an art; is it not an art to deceive a trout with an artificial fly? A trout that is more sharp-sighted than any hawk you have named, and more watchful and timorous than your high-mettled merlin is bold; and yet I doubt not to catch a brace or two tomorrow for a friend's breakfast. Doubt not, therefore, sir, but that angling is an art, and an art worth your learning. The question is, rather, whether you be capable of learning it? For angling is somewhat like poetry—men are to be born so; I mean, with inclinations to it, though both may be heightened by discourse and practice; but he that hopes to be a good angler must not only bring an inquiring, searching, observing wit, but he must bring a large measure of hope and patience, and a love and propensity to the art itself; but having once got and practiced it, then doubt not but angling will prove to be so pleasant that it will prove to be like virtue, a reward to itself.

Venator—Sir, I am now become so full of expectation, that I long much to have you proceed, and in the order you propose.

Piscator—Then first, for the antiquity of angling, of which I shall not say much, but only this: some say it is as ancient as Deucalion's flood; others that Belus, who was the first inventor of godly and virtuous recreations, was the first inventor of angling; and some others say—for former times have had their disquisitions about the an-

tiquity of it—that Seth, one of the sons of Adam, taught it to his sons, and that by them it was derived to posterity; others say that he left it engraven on those pillars which he erected, and trusted to preserve the knowledge of the mathematics, music, and the rest of that precious knowledge and those useful arts, which by God's appointment or allowance and his noble industry were thereby preserved from perishing in Noah's flood.

These, sir, have been the opinions of several men that have possibly endeavored to make angling more ancient than is needful or may well be warranted; but for my part, I shall content myself in telling you that angling is much more ancient than the Incarnation of our Savior; for in the prophet Amos, mention is made of fish-hooks; and in the book of Job, which was long before the days of Amos,—for that book is said to be writ by Moses,—mention is made also of fish-hooks, which must imply anglers in those times.

But my worthy friend, as I would rather prove myself a gentleman by being learned and humble, valiant and inoffensive, virtuous and communicable, than by any fond ostentation of riches; or, wanting those virtues myself, boast that these were in my ancestors (and yet I grant that where a noble and ancient descent and such merit meet in any man, it is a double dignification of that person):—so if this antiquity of angling, which for my part I have not forced, shall, like an ancient family, be either an honor or an ornament to this virtuous art which I profess to love and practice, I shall be the gladder that I made an accidental mention of the antiquity of it, of which I shall say no more, but proceed to that just commendation which I think it deserves. And for that, I shall tell you that in ancient times a debate hath arisen, and it remains yet unresolved; whether the happiness of man in this world doth consist more in contemplation or action?

Concerning which, some have endeavored to maintain their opinion of the first, by saying that the nearer we

mortals come to God by way of imitation, the more happy we are. And they say that God enjoys himself only by a contemplation of his own infiniteness, eternity, power, and goodness, and the like. And upon this ground, many cloisteral men of great learning and devotion prefer contemplation before action. And many of the fathers seem to approve this opinion, as may appear in their commentaries upon the words of our Savior to Martha (Luke x. 41, 42).

And on the contrary, there want not men of equal authority and credit, that prefer action to be the more excellent; as namely, experiments in physic, and the application of it, both for the ease and prolongation of man's life; by which each man is enabled to act and do good to others, either to serve his country or do good to particular persons. And they say also that action is doctrinal, and teaches both art and virtue, and is a maintainer of human society, and for these, and other like reasons, to be preferred before contemplation.

Concerning which two opinions, I shall forbear to add a third by declaring my own; and rest myself contented in telling you, my very worthy friend, that both these meet together, and do most properly belong to the most honest, ingenious, quiet and harmless art of angling.

And first I shall tell you what some have observed, and I have found it to be a real truth—that the very sitting by the river's side is not only the quietest and fittest place for contemplation, but will invite an angler to it; and this seems to be maintained by the learned Peter Du Moulin, who in his discourse of the fulfilling of prophecies, observes what when God intended to reveal any future events or high notions to his prophets, he then carried them either to the deserts or the seashore, that having so separated them from amidst the press of people and business, and the cares of the world, he might settle their mind in a quiet repose, and there make them fit for revelation.

And this seems also to be intimated by the Children of Israel (Psalm cxxxvii.), who having in a sad condition banished all mirth and music from their pensive hearts, and having hung up their then mute harps upon the willow-trees growing by the rivers of Babylon, sat down upon these banks, bemoaning the ruins of Sion, and contemplating their own sad condition.

And an ingenious Spaniard says that "rivers and the inhabitants of the watery element were made for wise men to contemplate, and fools to pass by without consideration." And though I will not rank myself in the number of the first, yet give me leave to free myself from the last, by offering to you a short contemplation, first of rivers and then of fish; concerning which I doubt not but to give you many observations that will appear very considerable; I am sure they have appeared so to me, and made many an hour to pass away more pleasantly, as I have sat quietly on a flowery bank by a calm river.

Piscator—And now you shall see me try my skill to catch a trout and at my next walking, either this evening or tomorrow morning, I will give you direction how you yourself shall fish for him.

Venator—Trust me, master, I see now it is a harder matter to catch a trout than a chub, for I have put on patience and followed you these two hours, and not seen a fish stir, neither at your minnow nor your worm.

Piscator—Well, scholar, you must endure worse luck some time, or you will never make a good angler. But what say you now? There is a trout now, and a good one too, if I can but hold him, and two or three turns more will tire him. Now you see he lies still, and the sleight is to land him. Reach me that landing net;—so, sir, now he is mine own. What say you now? is not this worth all my labor and your patience?

Venator—On my word, Master, this is a gallant trout; what shall we do with him?

Piscator—Marry, e'en eat him to supper; we'll go to my hostess from whence we came; she told me as I was going out of door, that my brother Peter, a good angler and a cheerful companion, had sent word that he would lodge there tonight, and bring a friend with him. My hostess has two beds, and I know you and I may have the best; we'll rejoice with my brother Peter and his friend, tell tales or sing ballads, or make a catch, or find some harmless sport to content us and pass away a little time, without offense to God or man.

Venator—A match, good master; let's go to that house; for the linen looks white and smells of lavender, and I long to lie in a pair of sheets that smells so. Let's be going, good master, for I am hungry again with fishing.

Piscator—Nay, stay a little, good scholar. I caught my last trout with a worm; now I will put on a minnow, and try a quarter of an hour about yonder trees for another; and so walk towards our lodging. Look you, scholar, thereabout we shall have a bite presently or not at all. Have with you sir! o' my word I have hold of him. Oh, it is a great loggerheaded chub; come hang him upon that willow twig, and let's be going. But turn out of the way a little, good scholar, towards yonder high honeysuckle hedge; there we'll sit and sing whilst this shower falls so gently upon the teeming earth, and gives yet a sweeter smell to the lovely flowers that adorn these verdant meadows.

Look, under that broad beech-tree I sat down, when I was last this way a-fishing. And the birds in the adjoining grove seemed to have a friendly contention with an echo, whose dead voice seemed to live in a hollow tree, near to the brow of that primrose hill. There I sat viewing the silver streams glide silently towards their centre, the tempestuous sea; yet sometimes opposed by rugged roots and pebble-stones, which broke their waves and turned them into foam. And sometimes I beguiled time by viewing the

harmless lambs; some leaping securely in the cool shade, whilst others sported themselves in the cheerful sun; and saw others craving comfort from the swollen udders of their bleating dams. As I thus sat, these and other sights had so fully possessed my soul with content, that I thought as the poet hath happily expressed it,

"I was for that time lifted above earth,
And possessed joys not promised in my birth."

As I left this place and entered into the next field, a second pleasure entertained me: 'twas a handsome milkmaid, that had not yet attained so much age and wisdom as to load her mind with any fears of many things that will never be, as too many men too often do; but she cast away all care, and sang like a nightingale; her voice was good, and the ditty fitted for it; it was that smooth song which was made by Kit Marlowe, now at least fifty years ago, and the milkmaid's mother sang an answer to it, which was made by Sir Walter Raleigh in his younger days.

They were old-fashioned poetry, but choicely good; I think much better than the strong lines that are now in fashion in this critical age. Look yonder! on my word, yonder they both be a-milking again. I will give her the chub, and persuade them to sing those two songs to us.

God speed you, good woman! I have been a-fishing, and am going to Bleak Hall to my bed; and having caught more fish than will sup myself and friend, I will bestow this upon you and your daughter, for I use to sell none.

Milk Woman—Marry, God requite you sir, and we'll eat it cheerfully; and if you come this way a-fishing two months hence, a grace of God, I'll give you a syllabub of new verjuice in a new-made haycock for it, and my Maudlin shall sing you one of her best ballads; for she and I both love all anglers, they be such honest, civil, quiet men; in the mean time will you drink a draught of red cow's milk? You shall have it freely.

Piscator—No, I thank you; but I pray, do us a courtesy that shall stand you and your daughter in nothing, and yet we will think ourselves still something in your debt; it is but to sing us a song that was sung by your daughter when I last passed over this meadow, about eight or nine days since.

Milk Woman—What song was it, I pray? Was it "Come Shepherds, deck your heads," or "As at noon Dulcina rested," or "Phillida flouts me," or "Chevy Chace." or "Johnny Armstrong," or "Troy Town"?

Piscator—No, it is none of those; it is a song that your daughter sang the first part, and you sang the answer to it.

Milk Woman—Oh, I know it now. I learned the first part in my golden age, when I was about the age of my poor daughter; and the latter part, which indeed fits me best now, but two or three years ago, when the cares of the world began to take hold of me; but you shall, God willing, hear them both, and sung as well as we can, for we both love anglers.

From even these brief excerpts of Walton's writings it is easily seen what a nobility of character and what a gentle, loving spirit he possessed. We surmise that if he was half as artful with his angling rod as he was with his pencil, he deserves even greater fame as an angler than he is renowned to have been.

FISHING REEL LORE:

More than three-quarters of a century back, viz: in the year 1839, the makers of the "Milam" fishing reel recognized the field awaiting to be occupied by a reel in which material and construction should be so combined as to pro-

duce an instrument absolutely reliable under any and all conditions of use and abuse. There was wanting a reel that should be light and compact in form, simple but powerful in its makeup and above all, one not easily deranged by the constant "wear and tear" inseparable from its use. With a full recognition of these exacting conditions they started in to make the reel that since has made the State of Kentucky famous. In all the years that have passed by since 1839 they have never deviated from the course originally laid down for its production, namely: the invariable use of the best obtainable material and upon such material the bestowment of every resource of ingenuity and painstaking workmanship. As a practical endorsement of this policy it is of record that the first Milam Reel, turned out by them in the year 1839, is still in perfect working order, and still giving a good account of itself on the bass streams of that state.

The following letters from two illustrious personages, addressed to the maker of this reel, attest its quality and a right to a place in angling history equaled by no other American multiplying and click fishing reel:

"Executive Mansion, Washington.

"B. C. Milam, Esq:

"My Dear Sir:—I have received, through Messrs. Blackburn and Breckinridge, the beautiful reel which you have sent to me, and I beg you to accept my sincere thanks for the same. I think it is the finest piece of work in that line I have ever seen and the sight and handling of it makes me long for the time when I can put it to use.

I have no doubt that it will be the means of affording me much pleasure, and I hope that my performances may do your handiwork no discredit.

Yours very truly,

GROVER CLEVELAND.

St. Paul, Minn.

"Dear Sir:—In reply to your note, I beg to say that I have used one of your reels for 18 years and it is yet in excellent order. The make and fashion of your work is quite unsurpassed.

"Faithfully yours,
"JOSEPH JEFFERSON."

The "Milam" is a combined multiplying and click reel, and is therefore equally available for fly or bait fishing. It multiplies four-fold and so light is the friction of its moving parts that a single smart stroke of the handle produces hundreds of revolutions of the spool. In bait casting the reel is used "clear," i. e. without either alarm or rubber, and with a little practice, the bait may be dropped with ease and precision on any desired spot within 50 or 60 yards. For fly fishing it is customary to use the drag, and when desired (as is usually the case), the alarm or "click," but any of these features can be utilized singly, or all of them collectively at will. Thus, by their use, the reel may be transformed progressively into a multiplying, click, or a free running reel at your pleasure. These changes are produced by sliding disks on the side of the reel and do not complicate its operation. Pinions and pivots are of tool steel carefully tempered and fitted with greatest accuracy. No castings are used in this reel; nothing but wrought metals. Plates, caps, handles, etc., are all cut from hard-rolled sheet metals. The reels are still made by hand, with painstaking care, now, as always since the industry was started about eighty years ago, and they are made in the same little Main street shop in the city of Frankfort, which is located on the Kentucky river, near the Elkhorn junction, both streams long noted for the black bass found therein.

Interesting History:

Judge Shackelford Miller, of Louisville, Ky., rendered an opinion in the suit of B. C. Milam & Son, asking for an

injunction to prevent the corporation, "B. F. Meek & Sons (J. H. Sutcliffe and others)," from using the words "Frankfort," "Kentucky" or either of said words in describing a fishing reel, and, further, that the defendant be compelled to disclose profits and that plaintiffs be given judgment for all profits made by defendant on reels so manufactured and sold. Judge Miller granted the relief sought. The facts as brought out in the case will prove of interest to fishermen, as they show a concise history of this famous reel and give credit to the real institutors of this commodity. The product put out by Meek today may be all that is claimed for it, but the angler must bear in mind, after reading the following facts brought out in the trial, that Milam and not Meek invented the reel, and should be given credit accordingly:

The evidence shows that crude reels were made in Kentucky before 1830 (investigation has shown that as early as 1810 a reel was made in Paris, Ky.) Mr. Theodore Noel, a watchmaker, made a reel in Frankfort about 1830. B. C. Milam was an apprentice under Mr. Noel's brother. Noel quitting the business, Milam went to work with Jonathan Meek. Not liking watchmaking, he (Milam) took up the reel business and developed the multiplying reel to its present state of perfection. He has devoted his whole life to it. For over sixty years he did nothing else. The first reels he produced were stamped: "J. F. & B. F. Meek," then "Meek & Milam" then "The Frankfort, Kentucky Reel, B. C. Milam & Son." By constant application he has built up a great reputation for his reel, built it under different names, but the same reel all the time. At last he was forced to go to the courts to ask protection for what he had been so many years honestly acquiring, and the courts sustained him.

In 1835, Jonathan F. Meek moved to Frankfort from Danville, Ky., and engaged in the jewelry business. His younger brother, B. F. Meek, and B. C. Milam went to work

as apprentices. In 1839 he and his brother formed a partnership under the firm name of J. F. and B. F. Meek, B. C. Milam still being associated with them. A few reels were made between this time and 1848, when B. C. Milam was taken into the firm, and the name became J. F. Meek and Company, B. C. Milam being the company and doing the work on the reels and stamping them "J. F. & B. F. Meek." as before. In 1852 this firm failed and Jonathan F. Meek moved to Louisville, where he worked until his death at his trade, watchmaking, for Wm. Kendrick.

January 1, 1853, B. F. Meek and B. C. Milam formed a new firm under the name of Meek and Milam, to continue the business of jewelers and reel making at the old stand on Main Street. B. F. Meek attended entirely to watchmaking and jewelry on the lower floor and B. C. Milam had entire charge of and did all the reel work on the second floor of the same house. The partnership agreement was in writing, and shows that upon dissolution Meek was to have the watchmaking tools and Milam was to own the reel-making outfit. This partnership was dissolved in 1885 by mutual agreement, and, according to contract, Meek took the watchmaking business and Milam took the reel making, both remaining in the old stand on Main street, Frankfort, Ky., Meek on the lower floor and Milam on the upper floor. During this partnership Milam stamped the reels "Meek and Milam" and after the separation he continued to stamp them "Meek and Milam," although Meek had no interest in the reel business, and so stamped them from 1853 until about 1880, twenty-seven years. During this long period the reel known as the "Meek & Milam" reel, and made exclusively by B. C. Milam, had become famous, not only throughout the United States, but was known to the anglers of Europe.

In 1882 B. F. Meek moved to Louisville and began to make a reel.

In 1898 B. F. Meek, having sold out to J. H. Sutcliffe

and others, who formed a corporation to continue the manufacture of reels, returned to Frankfort, where he lived until his death.

To quote Judge Shackelford Miller, further:

"The plaintiffs, B. C. Milam & Son, now complain that the defendant corporation, 'B. F. Meek & Sons,' with the design and purpose to get plaintiff's trade and to deceive the public, is now and has since its purchase from Ben F. Meek in 1898, been manufacturing reels in Louisville which it puts on the market advertised as the original 'Frankfort, Kentucky Reel,' by reason whereof, it is claimed, the public are deceived into buying defendant's reels as the reels of the plaintiff's make.

"No one of the Meeks is interested in or employed by the defendant corporation, "B. F. Meek & Sons."

"Prior to 1882 the 'Meek & Milam Reel,' made in Frankfort by B. C. Milam, had become generally known in Kentucky as the 'Frankfort Reel,' and outside of the State as the 'Kentucky Reel,' or the 'Frankfort, Kentucky Reel' and was so advertised by Milam in 1882, and was so stamped by him in 1896. The descriptive term or phrase, 'Frankfort, Kentucky, Reel' was first used by Milam, Furthermore, B. F. Meek was never engaged in the manufacture of fishing reels in Frankfort after 1855, while Milam had been continuously in that business at the old stand, 318 Main Street, in Frankfort, from 1848 to the present time, a period of more than fifty years. Under this state of facts, will the defendant be allowed to use the descriptive words, 'Frankfort, Kentucky,' in describing its reels?

"The plaintiff's reels have become famous during a period of nearly fifty years of exclusive manufacture at Frankfort, Kentucky—in fact, they became so popular as to be generally known and subsequently advertised as the 'Frankfort, Kentucky Reel!' To allow the defendant corporation to reap the benefit of the plaintiff's long and

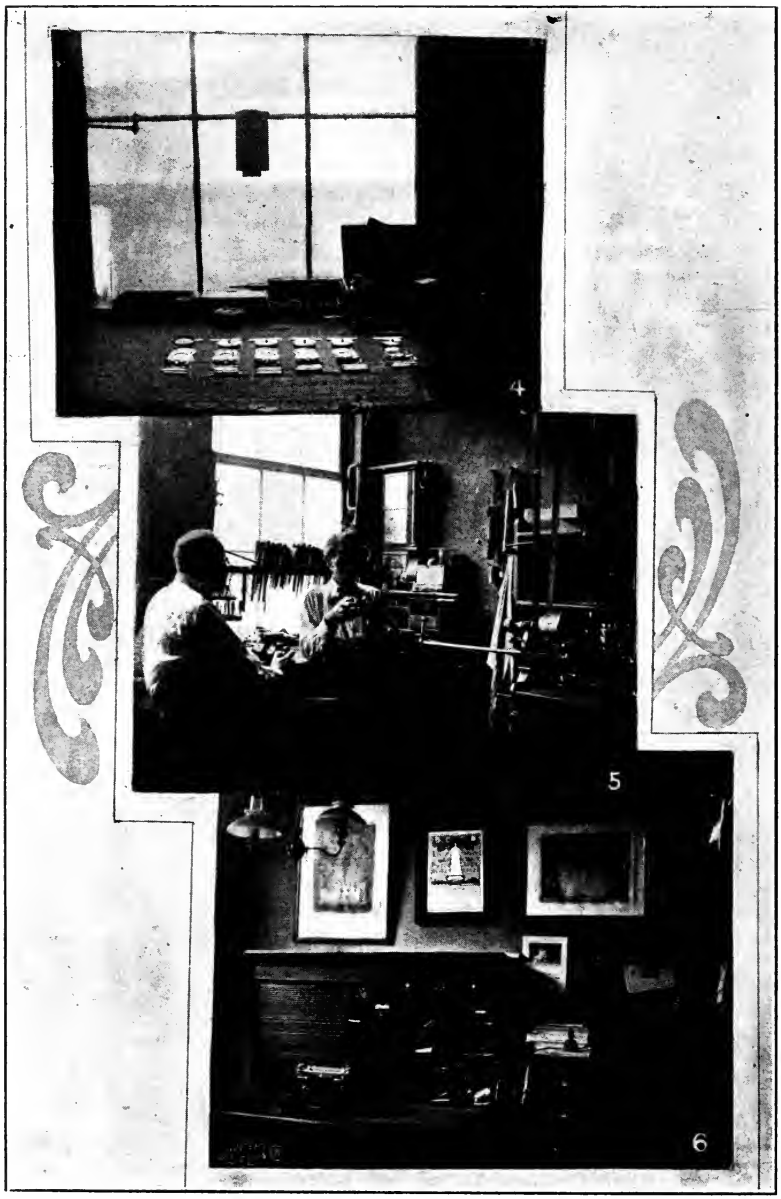
honorable course in business by indirectly naming or calling its reel, made in Louisville, as the 'Frankfort Reel,' or the 'Frankfort, Kentucky Reel'—something that Ben F. Meek, its assignor, never attempted or claimed —would be in violation of the broad and equitable rule of fair trade laid down in the many authorities above cited.

"I am of the opinion that the plaintiffs are entitled to the relief they ask.

"SHACKELFORD MILLER, Judge."

B. C. Milam's son (John W. Milam) still conducts the business at the old stand under the old firm name (B. C. Milam & Son), he having been taught to make these reels by his father, beginning his life work in the old shop at 318 Main street in 1877, since which time he has made enough reels to become a veteran himself and a worthy successor to his famous father, whose name had for so long been familiar to myriads of anglers in this and more distant lands.

In the accompanying illustrations, which are reproductions from photographs made in the old shop at Frankfort from which so many superb reels have been sent out broadcast to anglers everywhere, it will be noted that there is a marked absence of machinery and what is used is of the simplest designs. But no explanation of this seems necessary further than to say that "Milam" reels are hand-made; hence there is nothing old-fashioned or any obsolete utensils in the factory, which makes no pretensions of turning out reels rapidly and in large numbers by machinery. Just the reverse method is applied and each reel represents so much time, care and skill under deft fingers trained by a lifetime devoted to the business, as well as watchful eyes, that one who has been fortunate enough to witness the making of a reel can only marvel that it can be made at a profit though the selling price is high, as prices are reckoned today. But one has only to be shown a reel made a half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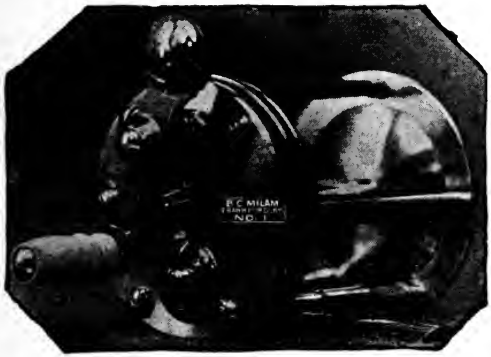
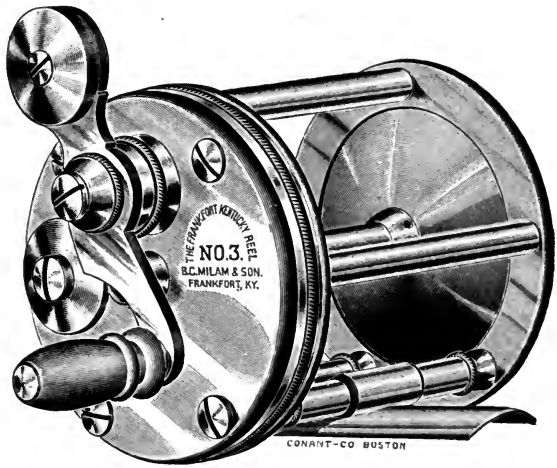
century ago in this old shop and still in perfect working order to understand that neither age nor usage can destroy these superb reels—the products of the Milams.

In the first illustration will be seen the material from which Milam reels are made—German silver sheet and rod





made for this concern and solid, so that the reels are alike all the way through and neither require or receive any nickel or other plating. This metal, according to our friend, Jno. W. Milam, is so hard that a sheet of it would

make a very excellent saw if teeth were cut in the edge. All parts of the reel are either cut from the sheet or the rod German silver, and after being buffed are as handsome as the finest watch, with which they will also bear comparison for adjustment. Each steel part that goes into these reels, when it reaches that stage, is carefully tempered and separately in the manner indicated in the second picture.

No. 3 shows the next step—the manner in which the steel pivots and pinions are tested. These are the ends on which the strain comes and they must be of material to withstand the hard blows of the hammer or be rejected.

The fourth illustration shows the manner in which the reels are made ready for assemblage. After all the parts are gotten out six complete sets are selected and placed in readiness for that part of the work which so few men can do well, assembling. This is the most particular part of reel making, for no matter how excellent the individual parts if they are not properly adjusted and put together the reel will not be a success. Therefore he who assembles the reel must be an expert, which are only produced by long experience and careful training.

Illustration No. 5 hardly needs comment. It, too, was made in the old Milam Shop. The reel that is being examined so carefully by the angler is one that had been in use for 60 years and still in perfect working order. Think of it—sixty years—longer than the average angler lives, although, if any human being is entitled to long life it is the angler, the sport being conducive to longevity beyond the average span allotted to man.

The 6th illustration shows a corner in the office of B. C. Milam & Son, and three diplomas given with medals of first awards at three of the great international exhibitions. The framed diploma at the left was awarded the firm at the World's Columbian Exposition, Chicago, 1894. The central diploma was given with a gold medal at the International Fisheries Exposition held in Bergen, Nor-

way, in 1898, while the one shown on the right is the diploma won at the Paris Exposition in 1900.

I know from experience the great love that attaches the angler to his favorite reel. He will not part with it for anything, so great is his attachment to it, growing as the reel does in favor with him with each succeeding year of its use. Finally, it becomes a veritable heirloom, to be handed down to the next generation as a precious gift, to be treasured by his offspring as few things earthly may be treasured. If the reel possesses all the good points desired by the angler, he ceases to look for something new from time to time that will be better. He is quite satisfied. The idea that other reels may surpass it in any respect is to him the height of absurdity, and he would not exchange it for a new and higher grade reel of the same make, lest it should be found lacking in some important respect. Hence it is that reels should be built up to the Milam standard, even tho' the maker forfeits the chance for a second sale to the same customer for a good half century. A reel that is clung to and treasured by an angler for fifty years, or even for half that time, is a very effective advertisement for the factory from which it came; the missionary work that it performs is worth the profits from a dozen sales, and probably brings the maker thrice that many. Even if common honesty did not dictate the use of the very best available material and the most perfect workmanship, this course is prompted by business policy. The appearance of goods may attract customers, but it takes quality to hold them.

The "Milam" reel itself has been its best advertisement and continues so today, as thousands of anglers will aver. If the Milam people used the same effective advertising policy as do their competitors, no doubt the "Milam reel" and not the "Meek reel" would today stand out pre-eminently in this line.

Points in Choosing a Canoe:

Over haste in buying a boat is pretty sure to bring regret. The prospective purchaser should know where he is going and what he is going to carry. Some sportsmen, who carefully consider every other detail of equipment, seem to figure that a "canoe is a canoe," and let it go at that.

Mr. L. E. Eubanks, a specialist on this subject, writing in the Sportsmen's Review, says:

"The birch bark, because it is the original Indian craft, is commonly regarded as the best canoe. But this is not true; the birch has many excellent qualities, the chief being its unequaled ability to weather a gale; but it is slower than a wooden or a canvas canoe. A new birch bark is very satisfactory, but as it is used it gets a bit loggy from soaking, and springs leaks easily. Also, it warps and twists—you seldom see a straight birch. If you decide to buy one of these canoes, try to procure one that an Indian has made for himself; the ordered one may prove a disappointment, bark full of tiny holes, and sewed with inferior stuff instead of jackpine or cedar roots. But the Indian-made craft will always be too high at bow and stern; it is fine for running rapids, but a poor all round boat.

"The wooden canoe, the favorite in Canada, is smart in appearance and satisfactory for most ordinary purposes, while it is new. Like the birch, it absorbs water and becomes frightfully heavy for a portage. Of the two woods generally used, cedar and basswood, the latter is the tougher, but it more than loses this advantage by its oversusceptibility to heat. It must be left in water all the time; exposure on a sunny shore will open it up and unfit it for use. The typical Canadian wooden canoe is built without seats, the paddler resting hips on the thwart, but the makers will put in a seat if so desired.

"The canvas canoe is the master craft in the paddle breed. It has the grace of a birch without the weight, the

smartness of a wooden canoe without the latter's extreme rigidity. The canvas canoe is a thing of life, pliant yet strong, buoyant, yet stable. It has most of the virtues of the other two, plus distinctive ones of its own; it is decidedly faster, being of the general model of the birch but with a smooth surface instead of rough bark to glide through the water. Secondly, it is delightfully light for portaging. Thirdly, it is easily and dependably mended when it suffers a tear. It will cost you more than a birch bought from an Indian, but less than any of the rib canoes.

"Whatever material you prefer, there are other considerations; you would not attempt to carry a ton in a little 13-foot canoe built for one man and his pack. You would require for this a freighter weighing four times as much as the little boat and some twenty feet long. Canoes weigh all the way from 50 pounds and less to 200 pounds; and sometimes two canoes of the same size will differ surprisingly in weight. Between these extremes, a man can get nearly anything he wants, and it pays to insist on suitability of your boat to the prospective use. For three men and equipment to start out on a rough lake voyage in a 14 or even a 15-foot canoe is apt to end in disappointment, if not disaster. Their craft ought to be 18 feet long, 36 inches wide and 13 inches deep. Two men could use a 17-foot canoe and yet have good capacity by selecting one with good width and depth, but as a rule three men require a long boat for satisfactory paddling.

"Sixteen feet is a good all-purpose length for a canoe. The width may be from 31 to 36 inches, depending on the degree of stability required in its use; the corresponding depth from 11 to 14 inches.

"Shape is another vital factor. Even the uninitiated can readily understand that a flat-bottomed canoe has more stability in the water. And it is equally obvious that, ordinarily, it would be slower. What the "will-be" seaman does not always know is the important part played by

the load in this comparison. Even some men of experience use a round-bottomed boat, in spite of their intention to load heavily, rather than sacrifice speed. As a matter of fact, loading up a flat bottomed canoe brings out its virtues—and speed.

"You can't have all the good qualities of canoes in one boat, and it requires careful consideration to determine the best combination—just how much speed you want to sacrifice for stability and capacity, just how much style for service, etc. The best river canoe will not be as good on a lake, and vice versa. But if you are headed for the North, the Hudson Bay country, say, you must have an all-round boat, not the best for any one place, but able to navigate rivers and lakes, fairly easy of portage, fairly swift, yet capacious enough for several months' stores. Such an all-purpose canoe must not be too long nor too short, we will select a 16-footer. The ends must be high enough for running rapids, so the current does not grip them; yet low enough to give us enough "wet keel" for safety on wind-swept lakes. (You'll encounter every old style of going in the North Country.) An experienced canoeman on this trip usually leans a bit to the straight keel, depending on his skill to get through the fast water. This boat, 35 or 36 inches wide and 14 inches deep, if well made, will weigh 70 pounds and be heavy enough on some of the long portages, but you won't dare take anything much lighter for such a voyage.

"Not all canoeists contemplate a long rough trip. The sport is a winner in all its forms, and the man—or woman—who must be content with a paddle in the placid park lake will have a lot of pleasure at that. For such a purpose we select a rather showy canoe, brilliant coat and gunwales, high, gracefully curved ends, Indian style. Needing no capacity for supplies and no particular stability, we can have a narrow, tapering boat that will cut through the water with great speed. Assuming that it will be used

THE HUNTERS' HAPPY RETURN TO CAMP WITH A MOOSE TROPHY.

by two persons most of the time, it should be about 16 feet long. A width of 31 inches, a depth of 10 or 11 inches, and a rounded bottom will make the craft very light and easily paddled.

"Canoes are alike in one thing, they all require care. Repair even a slight injury promptly; neglect permits it to grow worse, and you can not tell when an extra strain on the craft will cause an apparently trivial weakness to prove serious. In the case of canvas canoes, there is no excuse for neglect; adequate repair outfits are procurable from the manufacturers, and the work is very simple. Quoting an authority on the 'wounds' of canvas canoes:

" 'Melt the (canoe) glue until it is about the consistency of thick paint. Turn back the edges of the cut and paint the glue on the wood about an inch back all around the cut, then lay the canvas back over the glue and iron with a hot flat-iron. If the edges are badly frayed or far apart, and if it is a bad tear, paint on another coat of glue and lay over this a piece of canvas, cotton or silk about an inch larger than the tear, then iron again with a hot flat-iron. After this is done give it a heavy coat of shellac and paint any desired color.'

"But if a canoe is to be much left in the sun, marine glue will not do as a finish; it melts too readily. All considered, white lead paste is the best thing. Rub this well in and put on your varnish, and the wound is O. K.

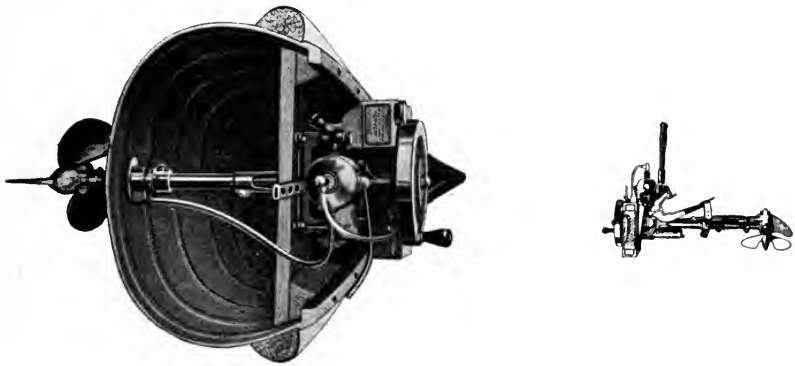
"About as many canoes are injured in the housing as in use. Leaving a delicate, perhaps, expensive canoe on a boathouse floor among scores of others, to be kicked and jammed about every day, or turning it over on the beach to stay indefinitely, is poor business. The best course is to elevate it into the roof of some shed or garage. Canvas bands of double thickness make good slings."

As pointed out in the practical suggestions given above, it is a very wise policy when selecting a canoe to select one that meets your own individual requirements. This

is governed by whether you desire a boat for an extended water trip, or merely one to use but a little in waters near at hand.

There is on the market anything to be had in this line from a birch to folding, telescopic, canvas and all the way up to steel, not to mention wood and the more modern aluminum.

In picking a canoe for a long trip one should remember there is not only the canoe to wearily drag from one portage to another, but the "duffle" must go as well. So,



"THE EVENRUDE MOTOR."

better get one as light as is consistent with your absolute requirements. Some anglers, and some waterfowl hunters, hold the canoe or boat of some shape as indispensable to the pursuit of the fish and the waterfowl, respectively. Indeed it does add a great deal of pleasure to the already exhilirating sports (I mean both fishing and waterfowl shooting), and canoeing has every right to its lofty place in our literature and in our hearts.

A fairly good boat can be purchased for about $15. a better one for $25 and an extra good one for from $25 to $50. For a long trip, you will need the best quality, and, in most cases, it pays to buy the best for any use. This rule not only applies to canoes, but to everything. It takes money to obtain quality, and quality is what counts.

The Evinrude Detachable Motor is a great boon to the angler and the hunter. It is easily adjusted, is portable, and is indispensable to the outdoorsman in every particular. It enjoys a fame that it richly deserves, and I heartily recommend its use by all anglers and hunters.

The Fisherman and The Outdoor Motor:

To the disciples of Izaak Walton, the Evinrude makes a mighty appeal. The long trip up to the "holes" where the "big fellows" lurk, among the weeds and grasses, is turned into an enjoyable ride, and what's more, you can troll all the way if you like.

When the wind or the shadows shift and the lure no longer tempts, give the fly-wheel a pull, "mote" over to the other side of the island, or across the lake, and try your luck at another spot. Plow right through the weeds or shallows, if you want to—the Evinrude is built for it. With the "cut-out" closed, there's no chance of scaring the fish, or disturbing your fellow fishermen.

If you find the lake "fished out," the water roily or too high, take your Evinrude—it's portable, you know—and try another lake or stream. Thousands of city sportsmen ship their Evinrudes to the Northern woods and fish the lakes for miles around the camp.

If you have ever pulled at the oars in the gray dawn, before the warmth of Old Sol has dispelled the damp mists, or with darkness coming on, labored painfully homeward, fighting a head wind, you have felt the need of an Evinrude —the motor that lengthens the day.

DESCRIPTION OF VARIOUS MEMBERS OF THE FINNY TRIBE:

The Salmons of the Pacific Coast.

The author is indebted to Mr. John J. Brice, United States Commissioner of Fish and Fisheries, and others, for

the following data concerning the various important game fishes.

On the Pacific Coast are found five species of salmon belonging to the genus Oncorhynchus, namely, the Chinook or quinnat salmon, the Red or Blue-back salmon, the Humpback salmon, the Silver salmon, and the Dog salmon. The Pacific salmon differ very slightly from the Atlantic salmon, the former possessing a larger number of rays in the anal fin, and more branchiostegals, gillrakers, and pyloric cœca.

The Quinnat Salmon:

The scientific name is Oncorhynchus tschawytscha, being commonly called by several other names, including chinook salmon, king salmon, Columbia salmon, Sacramento salmon, tyee salmon, and saw-qui. This is by far the most important of all the salmons, being not only superior as to food qualities, but attains a greater size, has a wider distribution, and thus has greater commercial value than all others. In size there is no other salmon in all the world to compare with it. In the Yukon River of Alaska it reaches a weight of well over 100 pounds, and in the Columbia River it sometimes attains a growth of 80 pounds. To the southward, it gets smaller; however, in the Sacramento river specimens of 50 to 60 pounds have been taken. The average weight is about half the figures cited above. It ranges from Monterey Bay to the Yukon, as far as experts have been able to determine.

The Blueback Salmon:

The blueback salmon (Oncorhynchus nerka) is called in different parts of its range as blueback, redfish, red salmon, Fraser River salmon, and sock eye or saw-qui. This fish is next to the smallest of all the salmons, the maximum weight being about fifteen pounds, the average 5 pounds.

In many lakes it weighs only a half pound when mature, and is known as the little redfish.

The Humpback Salmon:

This salmon (Oncorhynchus gorbuscha) is the smallest of the Pacific salmons; average weight being only 5 pounds, rarely weighing as much as 10 pounds. It ranges from San Francisco probably as far north as the Mackenzie River.

The Silver Salmon:

The Silver salmon (Oncorhynchus kisutch) is variously called silver salmon, silversides, skowitz, kisutch, hoopid salmon, and coho salmon. It is a beautiful fish, having a very graceful form and a bright silvery skin.

The Dog Salmon:

This is the least valuable of the Pacific salmons, although it is dried by the natives of Alaska for winter use. Its average weight is twelve pounds, the maximum being about 20 pounds. The range of this fish is from San Francisco, to Kamchatka, and it is especially abundant in Alaska.

The Steelhead:

This salmon (Salmo gairdneri) is also known as Gairdner's trout, hardhead, winter salmon, square-tailed trout, and salmon trout. In general appearance and size it resembles the salmon of the Atlantic coast, being distinguished from other Pacific coast salmon by its square tail in the spawning season, the small head, round snout, comparatively slender form, its light-colored flesh, and its habit of spawning in the spring. Its average weight in the Columbia is about 10 pounds, but it sometimes reaches a weight of 30 pounds.

Its range reaches from Santa Barbara on the southern coast of California to the Alaskan Peninsula, and possibly to the Arctic Ocean, and it is found in practically all of the streams of the Pacific Coast States which empty into the ocean.

SALMON FISHING:

If you hanker after thrills, hie yourself to the salmon waters. This is a most reckles warrior, is the salmon, and sure to give you a run for your money.

A rod of 14 feet is the longest you should get, and even an eleven foot rod will be found long enough for the careful handler, except in very swift water.

In the matter of flies, Jock Scott, Fairies, or Silver Doctor are three good patterns, while there are many others perhaps equally as good. Black Dose and Durham Ranger are also excellent flies for salmon fishing.

The Atlantic Salmon:

This fish (Salmo salar) is moderately elongate and but slightly compressed in shape; the greatest depth being about one-fourth the total length minus the caudal fin.

Its range, originally, in America seems to have been from Labrador or Hudson Bay on the north to the vicinity of New York on the south, but in many of the lakes and rivers which they entered, the species has been well-nigh exterminated by civilized man, and in the remaining inland parts of its range its numbers are apparently greatly decreased.

In certain lakes of Maine and northward the Atlantic Salmon is completely landlocked, and has somewhat different habits and coloration, but no distinct specific characteristics.

The angler will find this species a game fighter worthy his best equipment and best efforts. Newfoundland is said to be the best salmon fishing region extant in the east.

The Landlocked Salmon:

This is only a variation of the seagoing form, and is found in Sebago Lake and numerous localities of the United States and Canada. In our country it is known as Salmo salar sebago, while in Canada it is called scientifically Salmo salar ouananiche.

As far as is known to science, landlocked salmon exist only in some of the lakes in Sweden, besides the lakes of eastern North America.

This salmon is smaller and slenderer than the anadromous salmon, but the flesh is fat and rich and has a very delicate flavor, being held in high esteem for its food qualities.

In game qualities it is, for its size, the equal of any of the larger salmon, and it affords keen sport to the fly fisherman. It is much sought after, and ranks in public favor among the foremost of fresh water species. For thrilling action we recommend the landlocked salmon, and, no matter how much it costs you to take a trip to its haunts, we believe you will be well repaid.

The Rainbow Trout:

Salmo irideus, or rainbow trout has been the subject of many a fishing narrative, and right well does it deserve the honor and attention it has received at the hands of the sporting public, for it is one of the grandest of all our fishes.

Its original habitat was the Pacific Coast of the United States, being especially abundant in the mountain streams of California. It is now distributed in its various forms in many parts of the country. Ichthyologists have recognized the following forms: The brook trout, the McCloud river trout, the Kern river trout, the nashee or nissuee trout, the golden trout. In the wide section of the West in which the fish abounds it has various names in the

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different localities, such as "red sides," "mountain trout," "brook trout", and "golden trout", also "rainbow trout," while in the states east of the Mississippi River it is generally known as "rainbow trout" or "California trout."

The Brook Trout:

Salvelinus fontinalis, or brook trout is counted among the most beautiful, active, and widely distributed of the American trouts, preferring clear, cold, rapid streams, and belongs to that group of trout known as charrs, but it may be distinguished from the other charrs by the dark-brown or black marblings on the back and the general absence of spots on the back.

The brook trout is highly esteemed for its table qualities, having a fine flavor. This trout is a dead game fellow and consequently is much sought after by the followers of Ike Walton. It has a voracious appetite and takes advantage of every opportunity to satisfy it except during the spawning season, at which time it will partake of no food at all. Being strictly a carnivorous fish, its food consists of crustacea, mollusca, and various forms of insects and worms, but when pressed for hunger it will unhesitatingly devour its own kind.

The Lake Trout:

Cristivomer namaycush, or lake trout is the largest of the trouts and is classed with the charrs. This species is found throughout the chain of the Great Lakes, and in the inland lakes of northern New York, New Hampshire, and Maine; the headwaters of Columbia and Fraser Rivers, streams of Vancouver Island, and even waters within the Arctic Circle. Excepting the whitefishes, it is possibly the most numerous food-fish of the Great Lakes, and formerly none exceeded it in weight except the sturgeon. Some fishermen cite instances of lake trout weighing as much as

125 pounds, but the average weight will run probably from 20 to 30 pounds, perhaps less.

The Whitefish:

Coregonus clupeiformis, or whitefish, is essentially a lake fish, existing throughout the Great Lakes region, and being especially abundant in lakes Erie, Huron, Michigan, and Superior, while the eastern limit of its range is Lake Champlain, and it is found in Lake Winnipeg, and possibly farther west.

THE BLACK BASSES, CRAPPIES, AND ROCK BASS:

These fishes are members of the family known as "Centrarchidae," or fresh-water sunfishes, namely, the large-mouth black bass (Micropterus salmoides), the small-mouthed black bass (Micropterus dolomieu), the rock bass (Ambloplites rupestris), the crappie (Pomoxis annularis), and the calico bass (Poxomis sparoides).

Many fishermen find it hard to distinguish between the large-mouth black bass and the small-mouth black bass. The most reliable way to tell one from the other is by the number of rows of scales on the cheeks. The colors of each species vary with age and the size of the mouth varies with the size of the fish, but the scales are constant under all conditions. The following table will guide you:

Large-mouth.

Ten rows of scales on the cheeks; body scales large, about 68 in the lateral line, 7 above and 16 below the line.

Small-mouth.

About 17 rows of small scales on the cheeks; body scales small, 11-74-17.

The large-mouth black bass is variously known as Oswego bass, lake bass, green bass, yellow bass, moss bass,

bayou bass, trout, jumper, chub, and welchman. In the North it is called black bass generally, and in Virginia and North Carolina it is usually designated as the chub, while in Florida and the southern states it is frequently called trout.

The small-mouth black bass has been given in various regions the names: brown bass, lake bass, hog bass, ninny bass, black perch (used in the mountains of Virginia, Tennessee, and North Carolina) trout perch, brown trout, jumper, mountain trout, and other names of purely local use.

Rock bass are known in different parts of their range as red-eye, red-eye perch, goggle-eye.

The calico bass has been given the names of strawberry bass, grass bass, bitter-head, barfish, lamplighter, goggle-eye, goggle-eye perch, speckled perch, and speckled trout, while the crappie is known in its native waters as crappie, new light, campbellite, sac-a-lait, bachelor, croppie, cropet, and chinquapin perch.

Rock bass have a habit of settling down in dense, compact masses, like a swarm of bees, and when once the angler gets a rock bass to creel he can count on there being plenty others in the same spot. This fish will pugnaciously strike at the lure, and apparently take the hook on that account more than from a desire for food.

The calico bass is also a fairly game fighter, and will give the angler many a sportful moment.

In Kentucky, the black bass has acquired a common name which perhaps suits it better than any other applied to it, namely "jumper." Both the large-mouth and the small-mouth are famous for their jumping ability, to which every angler can testify. Especially are they active and have an inclination to show their jumping ability when they have temperate or cool water for a habitat. In warmer water they are a bit sluggish, but the black bass of the colder northern waters puts up a fight worthy of the salmon.

Large-mouth bass have been known to weigh as high as 23 pounds. Not infrequently, we are told, they are taken from the San Marcos River, Texas, weighing 12 to 15 pounds, while six and eight pound bass in the southern tributaries of the Mississippi and in the inland lakes of Florida excite no surprise.

The small-mouth only attains a weight of 5 or 6 pounds at a maximum, 2 1-2 pounds perhaps exceeding the average size.

Rock bass usually weigh only from a half pound to three-quarters of a pound, but some attain one pound, and exceptions to the rule weigh as high as 3 pounds.

The crappie and the strawberry bass will, generally, not exceed one pound in weight, but some have been caught that weighed as much as three pounds.

MISCELLANEOUS FRESH-WATER FISHES:

In addition to the fresh-water and anadromous fishes described in the foregoing pages, there are a number of others, including some species which have been introduced into this country from Europe.

Minor Trouts and the Grayling:

Salmo mykiss, or black-spotted trout is somewhat similar to the European sea trout or salmon trout (Salmo trutta) and in various parts of its range possesses the same half-migratory habits. This species is widely distributed, quite abundant and varies greatly in color and structure. Its range extends from Alaska to Mexico, being abundant in the streams of the Coast Range, Sierra Nevada, and Rocky Mountains, and also in some of the lakes in the same regions. It attains a weight of 30 pounds, with an average much less.

Then there is the Lake Tahoe or Truckee trout (Salmo mykiss henshawi); the Colorado River trout (Salmon mykiss

pleuriticus), and the yellow-fin trout (Salmo mykiss macdonaldi), all of which are handsome game fishes of great food value.

The Scotch lake trout, or Loch Leven trout (Salmo trutta levenensis), and the European brown trout or brook trout, or Von Behr trout (Salmo fario), were introduced into this country a few years ago by the U. S. Fish commission, and they have since become widely distributed in this country.

European sea trout in small numbers, also called salmon trout (Salmo trutta), have been introduced, while the species called the Swiss lake trout, European charr, or saibling (Salvelinus alpinus), has been propagated on a small scale.

The Michigan grayling (Thymallus ontariensis) is naturally found in some of the streams of Michigan, although it is caught in limited numbers from other waters. It is one of the most attractive of fresh-water fishes, and is a game fighter from start to finish. The Montana grayling (Thymallus ontariensis montanus) inhabits a limited region in the headwaters of the Missouri river, and is quite abundant in some streams. The Artic grayling (Thymallus signifer) ranges from the Mackenzie River westward through Alaska and northward to the Arctic Ocean.

The Muskellunge:

"The "Muskie," as this, the largest member of the pike family, is familiarly called, is one of our best game fish, ranking right up in the front rank as a fighter, and therefore is a great favorite with the average angler. It's scientific name is "Lucius masquinongy." It reaches a maximum weight of about 80 pounds, but the average weight is something like 25 or 30 pounds. It ranges thru the Great Lakes, Upper Mississippi Valley, Ohio Valley, and lakes in Wisconsin, Minnesota, New York, Ontario and elsewhere.

The "muskie" is provided by nature with a formidable weapon in the shape of a very large mouth and strong teeth, enabling it to capture with comparative ease living fish, which forms its principal diet. In order to effect their capture, it lies in ambush for them among the water-plants that carpet the lake or river bed, springing suddenly upon its prey with lightning-like quickness. From its very nature it is a hard and fast striker, hence much sought after by anglers.

The Yellow Perch:

This fish (Perca flavescens), besides being known as yellow perch, is called ring perch, striped perch and raccoon perch. It is very strikingly marked and is one of the best known fresh-water fishes of the Atlantic and North Central States. It is classified as of the spiny-rayed type and by some scientists is given first place among fishes. Its range extends from Nova Scotia to North Carolina in coastwise waters, throughout the Great Lakes, and the Upper Mississippi Valley, being abundant almost wherever found. It bites readily at the baited hook and is caught in large quantities by anglers.

The Striped Bass and the White Perch:

This fish, sometimes called the rockfish (Roccus lineatus), ranges from New Brunswick to western Florida, and is especially abundant from New York to North Carolina. It is readily caught by anglers on the coast and in the bays, sounds, and streams.

The white perch (Morone americana) is of the same family as the striped bass, closely resembling it in range, habits, etc., but it grows much smaller than the latter. At that, it is one of our choicest pan fishes.

The Sturgeons:

We have half a dozen species of sturgeon in the waters of the United States, as follows: The common and the

short-nosed sturgeons (Acipenser sturio and A. brevirostris), which are found only on the Atlantic Coast, ascending rivers to spawn; the white sturgeon and green sturgeon (A. transmontanus and A. medirostris) are found only in the waters of the Pacific Coast; the lake or rock sturgeon (A. rubicundus) is found in the Great Lakes, Upper Mississippi Valley, and other northern interior waters, and the shovel-nose sturgeon or white sturgeon (Scaphirhynchus platyrhynchus) is found in the Mississippi and various other streams of the South and West.

The common sturgeon of the Atlantic Coast grows as large as 500 pounds, or over, but the average is probably about 150 pounds. The lake sturgeon reaches a weight of approximately 200 pounds, but the average is only 60 pounds. The Pacific white sturgeon attains a weight of 848 pounds, and those weighing as much as 500 pounds were not scarce a few years ago in the Columbia river, the average being 150 pounds, but now it is much less.

The Flatfish, or Winter Flounder:

This fish is known scientifically by the terrific and lengthy term "Pseudopleuronectes americanus," and the body is regularly elliptical. The eyes and color are on the right side, the upper side of the head being covered with imbricated etenoid scales similar to those of the body, while the blind side of the head is nearly naked. Having a small mouth, this species feeds chiefly on small shells, crabs, and other bottom animals. It is found on sandy, muddy, and rocky bottoms, seeming to prefer sheltered coves and bays. This fish is one of the most abundant flounders of the Atlantic coast, and is especially numerous in southern New England and New York. Its range extends as far north as Labrador and as far south as the Carolinas, but is not plentiful south of New Jersey. The average weight is about a pound and one-half.

MISCELLANEOUS MARINE FISHES:

Among marine fishes are several worthy of special mention, such as the tautog, Spanish mackerel, pollock, and haddock; also sea herring, scup, sea bass, squeteague, cunner, sheepshead, and several flounders.

The Tautog:

This fish (Tautoga onitis) is a strongly marked species and belongs to a family (Labridae, or the wrasses) characterized in part by one dorsal fin, thoracic ventral fins, double nostrils, thick lips, and strong teeth in the jaws. The eye is small and placed high on the side of the head. This fish is found from Maine to South Carolina, being most abundant in the waters of Massachusetts, Rhode Island, and New York. Its strong and sharp teeth enable it to consume mollusks and crustaceans, which constitute its chief food, and it also eats sand-dollars, worms, and other animals. It bites quite readily and is a great favorite with anglers. Its average weight ranges from 2 to 3 pounds, however tautog weighing 6 to 15 pounds are by no means rare.

The Spanish Mackerel:

This fish (Scomberomorus maculatus) is widely distributed, being found on both coasts of North America. On the west coast it does not enter United States waters, but on the Atlantic seaboard it ranges from Texas to Massachusetts, and is especially abundant in the Gulf of Mexico, among the Florida Keys, in Chesapeake Bay, and on the coast of the Middle Atlantic States. It is one of our most important food fishes.

Haddock, Pollock and Other Gadidae:

These are important food fishes. The pollock is found from New Jersey northward, while the haddock ranges

from Delaware northward, and is, or has been, quite numerous on the "banks" lying off the New England shore. It is similar to the cod in habits, being found in the same places and at the same time as the latter. There is a fish called the tomcod or frostfish (Microgadus tomcod), which has been extensively propagated by the New York Fish Commission. It is a small, but dandy food fish, and ranges from New York to the Bay of Fundy. It is especially excellent in early winter, at which season it ascends the streams for the purpose of spawning. It seldom exceeds 10 or 12 inches in length.

The Cunner:

This fish (Ctenolabrus adspersus) is a close relation of the tautog, but on account of its small size, great abundance, and comparatively little commercial value, the propagation of the cunner has not been seriously undertaken.

The Scup:

This is a rather important small food fish found along the Atlantic coast, scientifically called "Stenotomus chrysops." Its range extends from Cape Ann to South Carolina, being most abundant in New England. It is a favorite with some anglers.

The Sea Bass:

The sea bass (Centropristes striatus) is another important food fish, found from Massachusetts to Florida, and is taken in large numbers especially from New Jersey northward with both lines and other devices. It grows to five pounds in weight, the average being, however, only 1 or 1 and 1-2 pounds.

The Squeteague:

The Squeteague or weakfish (Cynoscion regalis) is one of the important food fishes of the Atlantic and Gulf

coasts, ranging northward as far as Cape Cod. It varies greatly in size, but the average weight is under 5 pounds. The weakfish, as it is commonly called, however, has been known to attain a weight of 30 pounds.

The spotted squeteague or "sea trout" (Cynoscion nebulosum) is also a valuable food-fish, and ranges from Chesapeake Bay southward, being taken in largest numbers in Virginia, North Carolina, Florida, and the Gulf States. It reaches a maximum weight of 10 pounds, the average weight being about 2 pounds.

The Sheepshead:

This fish (Archosargus probatocephalus) is generally accounted one of the best food-fishes of American waters. It has a deep body, of a grayish color, marked by 9 transverse black bands, and a peculiarly shaped head, with mouth armed with prominent incisor teeth, which make it easily recognizable. Its range extends from Cape Cod to Texas, being found in greater abundance from Chesapeake Bay southward. It reaches a weight of more than 20 pounds, the average on the Atlantic coast, however, being not more than 7 or 8 pounds, and in the Gulf of Mexico it seldom exceeds 3 pounds. In southern waters this fish is a permanent resident, but in the northern portion of its range it is found only during spring, summer and autumn.

The Sea Herring:

This fish is scientifically denominated "Clupea harengus," and exists in great abundance on both shores of the Atlantic Ocean north of the latitude of about 37 degrees north. On the coast of North America it is not regularly abundant south of Cape Cod, but is occasionally found as far south as Chesapeake Bay. In numbers this species is said to be exceeded by no other fish. It is also found abundantly on the Pacific Coast, but is there known as a

scientifically different species, being called "Clupea pallasii."

The herring thrives upon minute invertebrates, principally copepods, larval worms, and larval mollusks. It is in turn eaten in great numbers by its enemies the cod, the haddock, sharks and many other fishes.

The Sand-Dab and Four-Spotted Flounder:

Besides the flatfish or winter flounder, two other flounders have been propagated artificially, namely, the Sand-Dab and Four-Spotted Flounder.

Tarpon, or Silver King: (Megalops Thrissoides.)

This great game fish is common on the gulf coast. It is a huge creature often weighing several hundred pounds, and takes a great amount of skill, endurance, and patience to land one. The tarpon angler ofttimes has a life-and-death grapple with his fish lasting over a period of many hours, before he is able to land his prize. It is a very thrilling feature of deep-sea angling, and nowadays light tackle, or comparatively light tackle, is used with considerable success. Lightness of tackle must be offset by one's skill. Mullet is the bait commonly used for this class of fishing.

Blue Fish: (Pomatomus Saltatrix.)

This fish ranges along our coast from Central Brazil, Guianas, the Gulf of Mexico, north to Nova Scotia. They are generally abundant and a species that prey upon other fishes, which form their sole diet.

These fish are usually captured by trolling, and furnish excellent sport.

The Pike: (Esox Lucius.)

Every angler who resides within their range, or who has journeyed to the region wherein they have their habi-

tat, will agree with us when we say that here is one of America's finest game fishes—a good fighter and a thoroughly game denizen of our inland waters. There are six or probably seven species of this genus. Their principal range is throughout the lakes and rivers of the Northwest. This fish often attains a size of from eighteen to twenty pounds, measuring up to three feet in length. It is one of the gamest and most vicious fighters that ever tied on to an angler's lure, and will make you think you've got a whale hooked instead of a mere inland game fish before you have finally landed him. A good rod to use for this kind of fishing is a rod about nine feet in length made of choice lancewood or bethabara, and it is well to use a good strong (but not too heavy) line that can stand the strain. The amateur will need heavier tackle for all fishing until he gets to be a thorough-going angler, at which time he can discard his heavy outfit and use regular sportsman's light weight tackle.

Wall-Eyed Pike: (Stizostedium vitreum.)

In the Northwest these fish are sometimes called salmon, which is not a correct name. They readily take the lure and are generally found in rather large numbers within their range, which is most all Northern waters. They are especially plentiful in the lake region of Northern Wisconsin.

Pickerel: (Esox Genus.)

This is one of the members of the genus "Esox" having several species, including the common Eastern Pickeral, or Green Pike, the Vulgate Humpbacked Pickerel, of the Western States; the Banded Pickerel or Trout Pickerel, of the Atlantic streams; and the Little Pickerel, or Western Trout Pickerel.

The pickerel is very pugnacious as a fighter and will put up a stiff resistence for several long moments.

White Perch: (Roccus Americanus.)

White perch are game fighters and offer great sport to anglers throughout their range. While not as prominently mentioned as some game fishes, they are an important species, and deserve greater notice from the angling public.

Deep-Sea Fishing:

While the foregoing list of fishes includes our most important inland game fishes, there are found in the ocean's briny deep large and small game fish beyond the power of our enumeration. In the ocean are found not only the largest fish, but the largest of all living creatures, greatly larger than any shore animal recorded in history, and while the land surface of this old mundane sphere has been pretty thoroughly examined from pole to pole, there are depths of the seas yet unexplored and monsters of the deep yet unrecorded on the page of science.

Man feels overawed on gazing upon for the first time the stupendous elephant; but what is the elephant compared to the whale, measuring from sixty to a hundred feet in length, and correspondingly thick? This animal, although it outwardly resembles a fish, is, nevertheless, not classed as such, because it gives birth to live young ones, whilst fish lay eggs, from which the young come forth after some time. Fish breathe under the water through their gills, whilst the whale has real honest-to-goodness lungs, and so must from time to time come to the surface to breathe; if it did not it would suffocate like other animals which are accustomed to live in the open air.

Consider the mighty tuna, the swordfish, the sailfish! Three mighty warriors are these, and many a sportsman will tell you what game qualities each possesses. Some of the most thrilling experiences the man with the rod and reel ever had were had with one or more of these fishes. Sometimes the battle lasted for hours with the issue of the con-

flict uncertain up to the last minute, yes, up to the very last second that life existed in the member of the finny tribe. Noted writers have described deep-sea fishing in all its entrancing, exhilarating qualities. Yet the subject has only been lightly touched. Much of mystery and charm remains to be learned of the sea and its denizens.

It has been proven by a scientist (to whom I am indebted for this data, Prof. J. B. Martens, of St. Nikolas, Belgium) that the sea is more densely populated than the land. Think of the herring and codfish, which for centuries have been caught by hundreds of millions without any apparent decrease in their numbers.

The farther north you go on land the fewer is the number of living beings on land you will find; the faculty of growth seems to diminish, the plants shrink, and gradually animals become scarcer and scarcer. Not so in the sea, which is full of life always and everywhere, and in latitudes where the soil, frozen nearly the whole year round, does not yield any harvest to man, he finds ample compensation for this in the fisheries, for the water which washes these northern shores contains such an abundance of provisions that it can never be exhausted.

The large carnivorous animals, like the lion, tiger, &c., seldom ever live in herds; as a general rule only a couple of them occupy the same given extent of territory. But in the sea we find still greater carnivorous animals than the lion and the tiger; among these are the various kinds of dolphins, which, from a scientific point of view, must be classed with the whales, because they also have lungs, and come to the surface to breathe. Altho' not as large as the whale, the dolphin must nevertheless be classed among the larger sea animals, for its length varies from eight to twenty and even as high as forty feet. In olden times this animal was considered a friend to man, it even being said that the dolphins could show affection, but to tell the truth, its only love is for prey, and the dolphins are really nothing less than bar-

barous gluttons, which make great havoc among the inhabitants of the sea. This bloodthirsty animal does not live in couples like the carnivorous land animals, but are found in large herds or schools. Could this be possible, the scientist asks, if those animals on which these pirates of the sea live did not increase in extraordinarily large numbers?

The whale also lives on live animals. It can well be imagined what a vast quantity of sea life it would have to devour to satiate its appetite.

But, passing from the whales and dolphins to the real fish, we find that they also, with very few exceptions, are carnivorous. It has been said by a noted scientist that the water is an enormous battle-field, where life is only maintained by constant slaughter. It is easy to observe the cruel and gluttonous character of the fish. Put some of the little fish—say sticklebacks, in a large glass full of water. As they are quite lively little fellows, they will, in the beginning, afford more pleasure than gold fish, which please the eye by their beautiful red color, but which are so slow in their movements that one might well think they are pining away or else sick. If a little worm unfortunately should attract the attention of the sticklebacks, it is made the object of very violent attacks, and is soon devoured.

If you should put in the glass small fish, just a few days old, and not any larger than tiny worms, not a single one of them will escape these greedy gluttons. So greedy are they after flesh that if properly fed they can be easily trained. As soon as some small pieces of flesh are thrown into the water they will approach rapidly, and by repeating this experiment four or five times, they can be taught to come to the surface as soon as they see the hand stretched out over the water. This spectacle, however, is soon followed by another pitiable one. The sticklebacks, confined within the narrow confines of the glass, do not find food enough, and thereupon begin to attack each other, and soon

a desperate civil war is being waged in the glass. The stronger pursue the weaker, and although they are not able to swallow them entire, they nevertheless inflict terrible wounds on them. Soon some of the fish may be seen to be hindered in their movements, having had their tails bitten off entirely or in part. The wound soon grows worse, and the poor little animal finally ceases to live; but even in its death agonies it is assailed by its cruel enemies. The fish continue this war until only two are left, which retire each to a different corner of the glass, like fistic champions in a boxing arena, and here they sit and watch each other with eyes full of hatred and envy; and if one of them is bold enough to enter the domain of his antagonist the result is a combat to the finish.

Now, if this is the way the little sticklebacks act, what can we expect from the greedy pike, which scientists call the scourge of fresh water, or the dangerous shark, which reaches the size of the large dolphins and is constantly roaming the seven seas, devouring everything that comes its way? Woe to the unfortunate sailor who falls overboard in shark-infested waters.

If we consider that nearly all fish are carnivorous and live by robbing and murdering, we must confess that the population of the sea must be infinitely larger than that of the land, for in any other case fish would not find food enough.

"If such is the case," the close reader will ask, "why is it that fish are still so plentiful?" It would doubtless appear to many that if these barbarous methods are pursued, water life must soon die out and become extinct. "How can any race of animals exist when such a continuous slaughter is transpiring?" "How is it that the larger of these insatiable animals have not long since entirely destroyed the smaller ones, finally to die themselves of starvation, leaving nothing but their skeletons in the waters of the ocean which has by that time become a howling wild-

erness?'' These are some of the questions the observant person will ask, and these questions are very readily answered.

In the first place, those animals which are intended to serve as a prey to others are endowed with greater fecundity; they produce more young ones than those animals which live on them; nature has provided this balance; so the carnivorous animals are therefore never in want of food, which consists of weaker animals, and still the races of the latter do not die out.

It will readily be seen how life in the water does not become extinct, in spite of all the scenes of murderous carnage which are enacted, if we remember that, as a general rule, the water animals increase much more than land animals. There are animals destroyed in innumerable quantities, both by their natural enemies and by man. Such are the herring and the codfish whose numbers do not seem to have materially decreased in the course of centuries. This will easily be understood when we state that a single herring produces 60,000 eggs, while the codfish matures as many as 2,000,000. It must also be remembered that the young fry hatched from these eggs grows up without any great difficulty. Young fish know how to care for themselves the moment they emerge from the egg, and father and mother need not look after them. The work of the codfish would be overwhelming if, like the birds, it had to feed its innumerable young.

The sea is not only rich in fish, but also in other animals. In its depths live all sorts of strange and unrecorded monsters. Science has barely touched the subject. Many revelations remain to be unfolded by future generations.

Only recently scientists were confronted with a baffling specimen of the deep, caught by Captain Charles H. Thompson off the Florida Keys. Leading scientists say it is the world's largest fish, yet some say it is only a mere baby of its tribe.

The strange monster was on exhibition recently in all the leading cities approachable by the yacht, on board which the monster was taken from place to place. The following is the newspaper account of it published at the time it was being shown in the principal lake, river, and coastal cities:

"What is declared by scientists to be the largest fish known in history or ever captured in the history of the world, will be on exhibition in this city on board the yacht Tamiami. It is so big, in fact, it could have swallowed twenty Jonahs without suffering the slightest pangs of indigestion.

"Of course it is harmless now, but before it succumbed to the effects of five harpoon thrusts and 151 good-sized bullets in a battle which lasted thirty-nine hours its animal instincts were so fierce that a blackfish weighing 1,500 pounds, an octopus weighing 400 pounds and 500 pounds of coral only served it as an appetizer of the mildest sort.

"This is a big fish story, but it is a true one, and is vouched for in every detail by the highest scientific authorities.

"The strange and mysterious monster, which, as stated above, will be on exhibition in this city, on board the yacht Tamiami, anchored at river front, foot of Vine Street, from 9 a. m. to 10:30 p. m., is 45 feet in length and measures 23 feet, 9 inches in circumference. It weighed when captured 15 tons, or 30,000 pounds, and its liver alone weighed 1,700 pounds.

"Think of harpooning such a monster as this and being dragged through the water at express train speed for hundreds of miles over the ocean for two days and nights before the game was up and the capture safely landed. Think of catching a fish with a mouth big enough to hold three men of ordinary size and of such strange and peculiar shape that men of science stood astounded. Sounds

like a Jonah story, doesn't it? And for all one knows to the contrary, it may be and unquestionably is the sequel to that story in the Bible that for ages has proved the stumbling block of men of science and made ministers of every creed use their wit and ingenuity to logically explain the story of the big fish that swallowed the Hebrew prophet some thousands of years ago."

Captain Thompson Proves Story:

It remains for Captain Charles H. Thompson, of Miami, Fla., to end the controversy, as to him belongs the credit of capturing the monster that could have swallowed Jonah with the greatest ease, had it been in the neighborhood when the prophet fell overboard from the ship that he was traveling on.

Nobody is better known in the world of sports than Captain Thompson. For years he has been and still is the favored patron of the Vanderbilts, and Whitneys and other millionaire sportsmen who frequent the lower east coast and who invariably engage him to accompany them on their trips through the Everglades and through the magic waters of the Florida Keys after big game fish, for which this section is noted.

Captain Thompson encountered this strange fish while cruising off the lower Florida Keys in that stretch of water that for more than a century was the scene of countless thrilling adventures and romantic exploits alike of Spanish explorers and bloodthirsty pirates.

Long the home of romance and mystery, it seems only natural that this strangest and most mysterious of monsters should have been discovered lurking in these magical waters. Capt. Thompson had captured many a wonderful inhabitant of these teeming waters, ranging all the way from predatory sharks to terrible devil fish, but nothing so strange, so weird, so unaccountable as this extraordinary

creature, this puzzle to the scientific world, which has become known as the Deep Sea Mystery, ever came out of the sea before.

With the first announcement in the papers of the remarkable capture, Captain Thompson was flooded with letters and telegrams from all over the country asking for descriptions and particulars of the wonder, and the interest became so widespread and insistent that after having the unique specimen preserved at great expense by Prof. J. S. Warmbeth, who was recommended by the Smithsonian Institution at Washington, he decided to exhibit the wonder throughout the country, and this he did.

He had a large sea-going yacht constructed, the entire lower deck being especially designed to accommodate the monster fish, and was made sufficiently large for as many as 500 spectators to view the fish from every side. This palatial yacht was built at a cost of over $30,000.

The mouth of the Deep Sea Mystery is an enormous cavity 30 inches wide and 54 inches deep, situated right at the end of the snout, and resembles that of a monstrous catfish more than anything else. Inside the mouth is a tongue 40 inches long, and gullet large enough to swallow a giant octopus weighing 400 pounds. It has numerous other characteristics of the true fish, which it undoubtedly is. There are no ribs and in place of a backbone its spinal column consisted of cartilaginous vertebrae, some of which were 13 1-2 inches wide and showing signs of ossification. This was proof beyond doubt that the creature was still undeveloped—it was a baby of its tribe in fact.

Naturalists are of the opinion that a full grown specimen would be two and one-half times as large as the baby captured by Capt. Thompson, and that had this animal lived out its allotted time it would have attained the stupendous proportions of 115 feet in length and 20 or 25 feet broad.

The tail of this creature measures ten feet from tip to

tip; the pectoral fin is five feet long, and three feet wide, while the dorsal fin is three feet long and two feet nine inches wide. With this huge muscular tail as motive power the creature was able to hurl itself through the waters for hours with almost the speed of an express train, and, dragging Capt. Thompson's boat behind it, not even the swiftest motor boat could have kept pace with it.

In appearance, the huge monster resembles a great fish, but scientists are dumbfounded as to its place among the species. It is beyond doubt a true fish, possessing all the well-known characteristics of a fish, including the gills, which are four feet long and by means of which it breathes. Yet it does not resemble any certain species recorded by science.

Here are some of the facts about the Deep Sea Monster:

Measures 45 feet in length; weighs 15 tons, or nearly thirty thousand pounds; its liver alone weighed 1,700 pounds, or more than ten full-grown men put together; it is twenty-three feet around the body, and its tail measures ten feet from tip to tip; it has swallowed an octopus weighing 400 pounds, a blackfish weighing fifteen hundred pounds, and five hundred pounds of coral was also found in its stomach; it could have swallowed twenty Jonahs without suffering the slightest pangs of indigestion; it smashed a boat into thousands of pieces and crushed the rudder and propeller of a thirty-one-ton yacht with a single swish of its mighty tail; five harpoon thrusts and one hundred and fifty large caliber rifle bullets only served to increase its fury, and it took five days to finally kill it; the battle lasted thirty-nine hours—two days and a night in open water, with the monster dragging a small boat at express train speed for hundreds of miles; scientific authorities believe that the creature was an inhabitant of depths more than fifteen hundred feet below the surface, and that it was blown up by some subterranean or volcanic upheaval which injured its diving apparatus so that it was unable to

return to its native depths; its hide is three inches thick, enabling it to withstand the most enormous water pressure, a pressure almost inconceivable to man; its eyes, which were small, have no lids and were never closed, indicating that it lived at a depth where eyes were of no avail; the creature is not classified in natural history, the genus or species is unknown, and it is not only the most remarkable zoological specimen, but the largest specimen of the fish tribe known in history; every undertaking establishment on the Florida East Coast from Jacksonville to Key West gave up their entire supply of formaldehyde to preserve the monster, and over nineteen barrels were used.

This is the greatest deep-sea fishing story in existence, and this sport, while dangerous, is indulged in by an ever growing army of ardent fishermen, who like to match their wits and energy against these great fishes of the sea.

Many a page has been filled by the daring acts of the deep-sea fisherman, and much still remains to be written upon the subject. Capt. Thompson has contributed one of the most daring feats yet recorded, but who knows but that some day, sooner or later, one of these FULL-GROWN Deep Sea Mysteries will be forced to the surface by some mishap and that some sportsman may tie on to him as Capt. Thompson did. Then will the world be astounded as never before.

Tackle makers had better begin preparing for that fateful day, and bend their wits to devising methods of capture and tackle that will hold the monsters of the sea yet undiscovered.

Scientists had always claimed that the depths of the sea was nothing but a dark desert, without inhabitants or vegetation, but this theory has since been exploded. In those days they only reasoned from speculations, to engage in which they need not leave their comfortable studies, but in our time it has been shown how deceptive such speculations may be, and how necessary it is to examine nature

herself, and, so to speak, to catch her in the very act, if you wish to learn her mysteries. Because we know that the animals of the upper world live under such and such conditions, we have no right to conclude therefore that the depths of the sea remain uninhabitable, and so this huge monster recently captured will cause some of the scientists to re-shape their opinions along this line.

LAKE AND STREAM FISHING:

This class of fishing is the most important kind of fishing to be had in America for the reason that the greater part of our anglers find it more convenient to fish in nearby lakes and streams than to visit the distant sea.

Of course, large numbers of sportsmen living in close proximity to the ocean may indulge in the luxury and pleasure of sea-fishing, but the great mass of anglers find this inconvenient and in some cases next to impossible. Therefore, they must be content to enjoy the equally as pleasurable (if slightly less exciting) form of inland game fishing.

The inland fisherman is blessed with a variety of fishing in America quite beyond compare, for here we find in our lakes, rivers, and streams everything desired in the way of game fish. Show me a species of the finny tribe that can outfight the battling black bass, the mighty salmon, the lake trout, rainbow trout, brook trout, the mighty "muskie," and our other inland game fish! I do not think the inland game fish of any other country can offer so much fighting ability in so many species as can America. Then there's the Great Northern Pike, one of the most brilliant fighters that ever tied on to an angler's line!

Indeed, what necessity is there for our inland anglers to be jealous of their brethren along the sea-coast? None whatever. If there is any jealousy to spare on either side, we think it's coming quite the other way, maintaining that the sportsman who has yet to land his first pike, his first

black bass, or his first trout, has missed a great deal of the joys of fishing. These are joys never forgotten. In his old age, the angler will recall those pleasant memories, memories that never die while life remains. The writer can recall fishing trip after fishing trip just as vividly as tho' it happened yesterday. I distinctly remember one outing in particular that I shall never forget.

Leisurely we paddled the small boat up the silently flowing Licking River, nothing intervening to mar our pleasure or peace of mind on the way.

"Gosh, this is a darned sight better'n pining away back there in town, isn't it?" chimes Doc.

"Those are exactly my sentiments, old top," I answered.

So we paddled on, finally reaching the mouth of Raven Creek, fishing waters long noted in local history.

With a few deft strokes of the oars, Doc had the craft in a good position in the center of the creek where it emptied its crystal flow into the broad waters of the Licking; then we fished down stream, the current carrying our floats, or corks, swiftly toward the river.

This is the season when artificial bait is used in this region. Earlier it would have been useless to use flies, or spinners, as the waters that flow through the level portion of the State are very muddy during the rainy season. Nothing less than live minnows, crawfish, angleworms, or "devils" would attract a denizen of the deep during that period.

Now, however, late in summer, the rains abated and the water was clear as that of a mountain torrent, and so flies and spinners were in order.

I distinctly remember every detail of the trip. It comes back to me as a vivid dream, only more real, of course. Doc was the first to land his quarry. It was a whopping black bass of the species "Micropterus dolomieu," a small-mouth. Submarines weren't in the running

at all in comparison with that bass. It sure was some sprinter. Doc finally brought it to creel, however, after a lengthy argument during which it was uncertain who would win the joint debate.

The next one tied on to my line. And it was one of those fellows with a head full of fish sense. He struck right out toward the boat, accumulating the necessary slack line, then, with a mighty "flop, skip, and a jump" leaped clear of the water and began shaking himself, trying to all intent and purposes to shake the dratted hook out of his mouth, but I saw what was up and gathered in the slack, forestalling his bold attempt to escape. The effort of the fish, tho' vain, was oft repeated, and more than once before I finally plunked him safe aboard boat it looked like he had things "all his own way with a down-hill pull." Gee! but it was a plumb beauty, too. Tipped the scales evenly at four pounds, one ounce. Some fish for these waters, and every inch a fighter.

But there was a comic role to be played that eventful day, and as fate would have it, Doc was the "goat." He had been watching me land the prize with a jealousy ill concealed, and when finally he got another strike he bent all his energies to landing the fish that he hoped would outweigh and outdo mine.

He grasped the rod with both hands, thumb firmly in place against the reel, all ready to snag Mr. Fish.

Whow-whizz! wh-r-rrr! sang the reel, as the big fish went on his way liberty-bound. Finally, after successive efforts, Doc turned him and then began the reeling in process, ever watchful lest the fish should suddenly buck-jump, or create slack line by running toward the boat.

When the specimen was finally got on board ship, after much effort and time, what do you reckon it proved to be?

I looked at Doc and Doc looked at me. I was giggling, he was frowning. Boys, he had caught a bloomin' water-dog! I shall never forget the look of gloom and utter dis-

By Courtesy U. S. Department of the Interior.

SCENE IN CRATER LAKE NATIONAL PARK.

gust on his face. Of course, this was my queue to accord him the "horse-laugh," which I forthwith did.

But I had yet to learn the truth of that time-worn adage that, "he who laughs last laughs best." It was my turn next to land something, which I was most certain was a member of the finny tribe of the black bass species. But it was not. What I landed was a dum-goozled old hard-shell turtle.

This was Doc's time to laugh, and he laughed so hard tears stood out on his cheeks. It was me that was the "goat," after all.

Memories of outings on the rivers and lakes come back to each of us, as does this memory of that fishing trip up the Licking River with my friend Doc. Nothing can erase such pleasures from the human memory. They will be recalled, perhaps, in days of stress and worry, and serve as a tonic, mayhap, to many an old man that has commenced the journey down the western slope of life. He will find new strength to buoy him up in his declining years as he remembers the glowing days of his youth and manhood, when with rod and reel and tackle-box he wended his way joyfully down by the old mill-stream, or to the meadow-brook, or beside the lake, there to while away pleasant hours, enticing choice specimens of the cool depths therefrom by the employment of his angling art.

Art it is indeed! It takes pure, unadulterated art to make a successful fisherman, whether your tackle be simple in construction, or magnificently modern. Here is another thought: "It is not clothes that make the man," so neither is it tackle that makes the angler. It is his art and his ability to apply that art that counts most. Good tackle, of course, is indispensable, but of itself it avails nothing. Placed in the hands of one not accustomed to the ways of the wily trout, the mighty salmon, the battling black bass, tackle is nil, but placed in the hands of the natural-born sportsman, educated to the ways of the craft,

good tackle avails much—it spells success in the angling game.

The Anti-Back Lash Reel:

The back-lash, which occurs so persistently when using an ordinary reel, has done more to discourage the sport of bait casting than even that oft mooted question: "Why don't they bite?" After the beginner has wrestled with a good old fashioned back-lash for a dozen minutes, more or less, right at a time when he knows his bait should be working and finally does get it untangled only to have it occur again on the next cast, it's not strange that he becomes discouraged. In fact there is not a bit of doubt but what the back-lash has kept many promising candidates from becoming disciples of Isaak Walton.

Those who have not the time, nor patience, to attain the necessary skill required to manage an ordinary reel will find an easy solution for the problem in the South Bend Anti-Back-Lash Reel.

This reel obviates entirely the necessity of thumbing the spool in casting. The caster has only to learn to throw the bait properly; the carrying out of the line and the speed of the spool factors are taken care of automatically by the reel itself. In other words, the reel thumbs itself with a greater precision and accuracy than can be done by the most expert seasoned angler.

Think what an invention of this kind means! It means that the city man, who longs for the joys and thrills of casting for big fish, does not have to cast for years and years to learn to do it successfully. It means that any man, woman or child who can hold a fishing rod may enjoy all the pleasures experienced by the seasoned angler, the very moment this reel is made part of the equipment.

Aside from furnishing a solution for the beginner's greatest problem, this reel has advantages which appeal

to the skillful angler—advantages that the best caster that ever "thumbed" a spool cannot well afford to overlook.

The use of the reel for night fishing work is an important feature for the angler who, though he may be ever so expert, is handicapped by his inability to see the bait for the South Bend Reel thumbs itself and makes night fishing a continuous enjoyment.

The Anti-Back-Lash feature of this reel, however, is not its only advantageous factor, nor is its use a necessity. The reel is made so that the Anti-Back-Lash device may, or may not be utilized. Simply turn the adjusting screw a half-turn and you have a reel of the ordinary type, an exceptionally high grade one; a masterpiece for free-running and wearing qualities and ease of operation; equal in every way to any high grade reel on the market.

Many skillful anglers, owners of various makes of high grade reels, prefer to use their South Bend Anti-Back-Lash reels for all around work in preference to others.—From "Days of Real Sport."

THE CASTING ROD:

In successful casting the rod plays a very important part, as is learned very quickly by the angler who takes up the sport with the intention of getting all there is to be had in the way of pleasure, genuine thrills, invigorating excitement, and true health-giving recreation.

Therefore, extreme care should be exercised in selecting the type of rod which embodies those factors which will serve one best in his pursuit of angling pleasures.

You will find rods constructed of various materials, in many different lengths, weights and degrees of resiliency.

As mentioned under "The Art of Casting," the type of rod, its weight, whippiness and material from which it is constructed, will vary with the class of work that the caster wishes to do. For general work, however, the split

bamboo rod of a length about the same as the caster's height, will prove to be most satisfactory from the view points of action, ease of casting, accuracy and general adaptability to all around work, and in the long run prove to be the most serviceable rod.

A properly balanced bamboo rod supplies the correct resiliency or whip, which is so necessary to the easy, skillful, graceful cast, better than any other material yet used for making rods suitable for general work.

There are other advantages embodied in the Heddon type of rod which makes these rods most desirable, namely: the patented Locking Reel Band, the large diameter cork grip in the peculiar shape that permits the angler to grasp it more firmly, the short butt and long tip features, which insures greater resilient action so necessary to good casting, and the modified size of the guides—these are all characteristic features which make these rods, grade for grade, superior to ordinary bamboo rods.

If you want a rod that is easy to work; a rod that is rigid, responsive, alive; a rod that will supply you with power, poise and delicacy, with an action that is graceful and almost effortless in its work, then you want the Heddon type because it will fill the bill.

The South Bend Special Rod is manufactured by James Heddon's Sons and we are glad to recommend it as a rod built for service, long and dependable, without any frills or fancy trappings of any nature; a rod that will give you everything that can be had as far as good work is concerned, without the style and pretty decorations that usually go with more expensive creations.

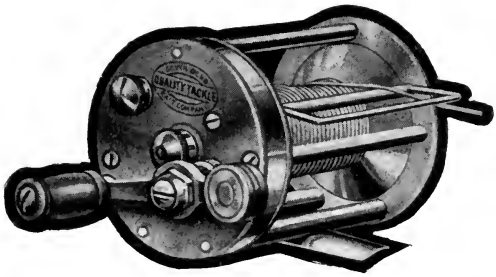
These people feature this rod in three different lengths and in two different weights in each length. The one is designed for casting heavier lures such as minnows, frogs, pork rind, etc. This is the Standard type. The other, known as the "Special Light," is of lighter construction

and designed especially for use with lighter lures such as spinner hooks, Buck-tails, flies and all other light lures.

The beginner will make no mistake in selecting this type of rod because it is a rod that is built to stand the wear and tear and give real, genuine service; a rod that you can trust implicitly.—From "Days of Real Sport."

Description of the South Bend Anti-Back-Lash Reel:

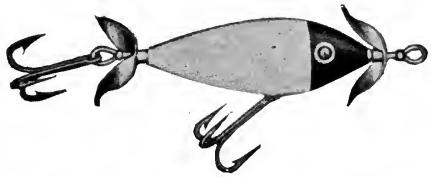
The reel is of beautiful yet plain design, and possesses a simple elegance all its own. The working parts of the Anti-Back-Lash device are few and very simple. It is strong, well made and designed to withstand successfully the wear and tear of long and continuous bait casting. The frame and all its component parts are made of 8 per cent solid German Silver; very light, strong and rigid. Dimensions: Capacity, measured by standard 16 or 20 pound test silk line is 100 yards; Diameter of end plates 2 inches; length of spool 1 7-8 inches; diameter of spool ends 1 1-2 inches. Bearings: The spool and gear journals are of high grade tool steel, accurately turned, ground, lapped and burnished to a mirror-like surface and run in phosphor bronze. The end thrust is supported by adjustable jeweled "spool journal" caps of screw-off pattern with spring tension grip. Gearing: The gear consists of a special hunting tooth train, the gear of which is made of solid Tobin bronze and the pinion from special steel which produces a powerful, yet absolutely quiet, smooth, free-runnning reel. The gearing is quadruple multiplying. Crank and Click: The crank is of pleasing, artistic design; correct in shape and accurately counterbalanced; the grip is white Ivoroid. The click consists of a pawl and rachet made of hardened tool steel; it is operated by a thumb button on the tail plate and actuated by a phosphor bronze spring.



Style No. 1131A, South Bend Anti-Back-Lash Reel. These reels may be had now at $10.00 each.

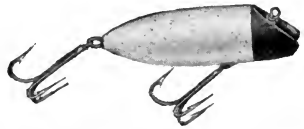
The Famous Bass-Oreno Bait:

The body of this bait is 3 1-2 inches long, weighs approximately 5-8 ounce. It is supplied in six standard high grade enamel finishes—guaranteed not to crack. (Style No. 973RH.) Bait here shown has a red head and white body.



South Bend Midget Surf-Oreno:

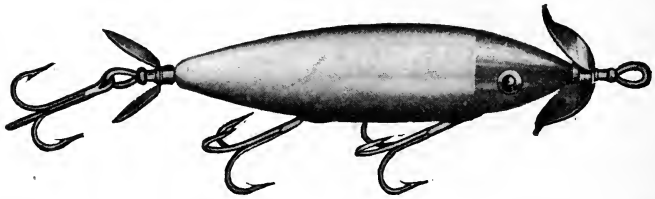
This bait is made of special light wood, the body is 2 3-4 inches long. It weighs approximately 1-2 ounce. Supplied in red head, white body, and in several other finishes. Style No. 962RH.



South Bend Babe-Oreno:

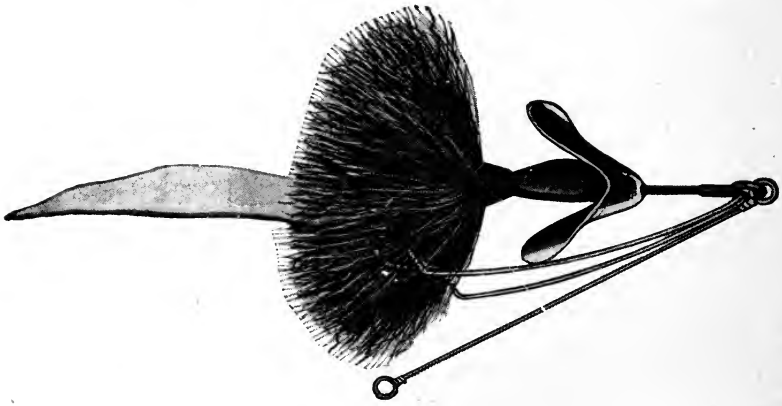
The body of this bait is 2 3-4 inches long, weighs approximately 1-2 ounce. Equipped with one belly and one

tail No. 1 treble hook. Supplied with red head, white body, as well as in other colors. Style No. 972RH.



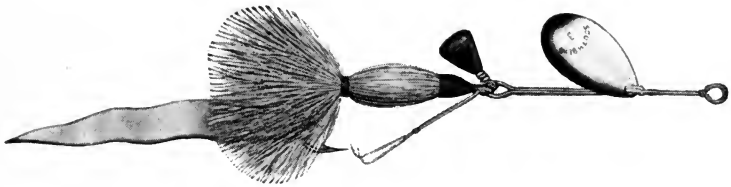
South Bend Standard Surf-Oreno:

Made of special light wood, body is 3 3-4 inches long. Supplied in many standard finishes of enamel. Style here shown has red head and white body. Style No. 963RH.

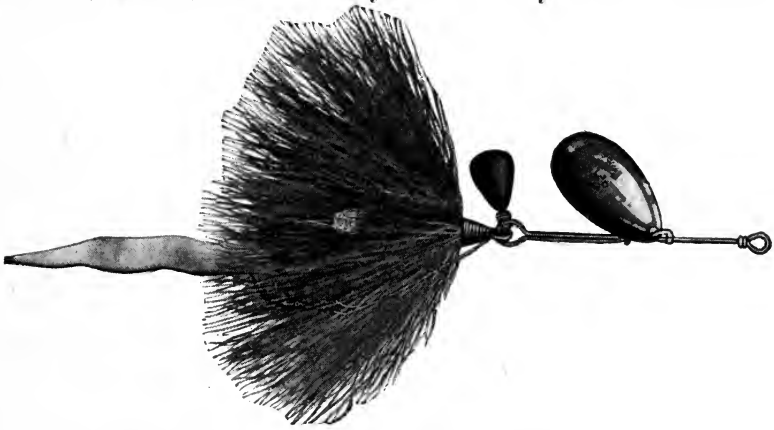


The South Bend Weedless Spinner Buck-Tail, a wonderful lure, absolutely weedless, of size and weight easy to cast. A remarkable game-fish getter than can be used in the thickest of weeds. Complete with the pork-rind it has an irresistible appearance in water. Furnished in red, white, natural or yellow. Style No. 565W.

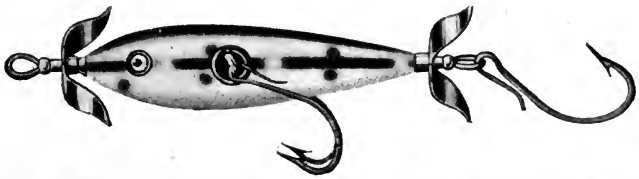
South Bend Weedless Buck-tail Spoon, particularly suitable for casting in pursuit of those vicious fighting



small mouth bass in rivers or lakes. Also holds the record of landing some big muskies. Hook is 3-0 Sproat. Used with a pork-rind, it makes a very attractive lure. Furnished in red, white, natural or yellow. Style No. 1563AL.



South Bend Weedless Buck-tail Bass Spoon, a clean sportsmanlike bait of just the right size and weight for casting in the lily pads, docks, etc. With pork-rind attached it makes a very effective combination. Style No. 1545AL.



Single Hook Minnow. The demand for minnows equipped with single hooks, instead of trebles, has been

constantly increasing. This is probably due to a desire to get away from the multiplicity of hooks and brought about also, by the requirements of laws in certain States which limit the number of hooks that may be used by the angler. Cut here shown is Style No. 904W-SD. Several of the other baits these people put out are made with the single hooks, as here shown, in various finishes.

South Bend Flies are furnished tied on straight eye ringed Sproat hooks, not snelled, thus permitting attaching a spoon or spinner. Supplied in twelve colors, various sized hooks.

Casting For Game Fish:

The step from boyhood fishing days to that perfection in angling science known as casting, is one that can be measured only in years. Generally it stretches over about a dozen. It may vary more or less but in the main the boy must have grown into a full, mature manhood, before he takes up casting and attempts to pit his prowess against such worthy foes as the Bass, the Muskie, the Trout and others of the gamy tribe.

With a free-running reel, a light silk line, a light, flexible rod and suitable lures, the lad who at one time was fully satisfied with the small fry finds that hooking a lively bass is an entirely different sensation and that he has encountered a foe worthy of all the prowess his advanced years have given him.

Just imagine a mighty black bass striking your lure at the end of a well-made line—imagine him going down through the cool, weedy depths, making the line fairly sing

in the way it cuts the water—imagine how this plunging, jerking, spirited fighter makes your frail-looking, slim, six-ounce rod bend to the danger point. Ah! no wonder you give away to him, fearing to attempt to hold by main force.

Splash, and he darts to the surface and in a seeming frenzy throws himself into the air a shining silvery, quivering mass, filled with fight and anger. Splash! again—and he dives down to the bottom; you feel the burn of the silk line as it slides through your almost trembling fingers.

By now he has you sweating; you start to get up, you sit down, you are on the anxious seat every one of the seconds which seem minutes.

Now, what do you think? Is he equal to your skill, your presence of mind, your craftiness or are you equal to his cunning, his quickness, and his strength?

Then slowly, oh, so slowly, you lead him to the boat. Your hand slips into the water—you disdain to use a net or a gaff on a prize like this—and then—

Swish! and he goes again—not conquered yet, you must let him have this final fling. Again you slowly bring him to the boat and then—your fingers slip down into his gills or jaws, you swing him into the boat. He is yours then.

That's casting for game fish—that's why men look forward to every holiday; why they steal away from their daily work as often as possible and use their Sundays as frequently as convenient for fishing trips.

That's why men leave luxurious homes and rough it—at a camp, put up with fares far inferior to what they get at home, leave nice soft beds and sleep even in a barn, rise at daybreak, when at home to rise at eight would be a hardship, row a boat mile after mile without tiring or complaining—all these and a lot more trials of like nature will men stand—

And for why? We know of but one answer. It's for

the pleasure and satisfaction that is secured in fighting the gamy, battling king of the waters on his home ground in a good square way—that's the compensation.

There is another angle from which we may view this question—it's the health-building factor that goes with angling.

Of all sports, we can't think of a single one that provides the latitude for healthful recreation that can be had in the practice of angling. A man with a surplus of vigor and energy can work as hard as he likes and enjoy himself accordingly, while his anaemic brother can take the sport in lighter degrees, work slower and get suitable recreation—both equally benefited by the outdoor exercise obtained.

To be a caster, you must go out-of-doors. You must go where the air is pure, where there is plenty of sunlight, breezes, scenery, trees, shrubs, etc. You get close to nature, away from your daily environments; you live a different life, eat different food, breathe different air—every thing is different and your well-being is improved in consequence.

This probably accounts for the reason that many of us make fishing our hobby and, truly, it is a hobby with many individuals.

Nowadays, a hobby is a necessity with a business man—it provides a means which enables him to forget his business, to employ his mind outside of business hours and at the same time it is an excellent avenue of amusement.

Every red-blooded man should have a hobby. He owes it to himself, to his family and to his country—because it makes him a better, broader, wiser and more even-tempered man.

Now, what could be a more commendable hobby—one that is more enjoyable, more entertaining and more worthy the effort required to further it than that which brings you into the closest possible touch with nature; in touch with

her streams, her rivers, her lakes, her shrubs, trees, bushes and her acquatic peoples?

Think it over—what single sport offers a greater opportunity for personal action, recreation, pleasure, health and excitement; what other sport destroys as little and yet provides so much?

The originator of the buck-tail bait was an ardent fisherman. So ardent in fact, that his business never grew in proportion to the genuine merit which the baits possess. The inventor of the South Bend Anti-Back-Lash Reel still uses the grandmother's funeral excuse very frequently in order to go fishing.

The Origin of Artificial Minnows for Casting:

The legend has it that many years ago, after a lot of hard work with nothing to show for it, a disgusted and very much disgruntled fisherman sat in his boat wrestling with that old theorem, namely: "Why don't they bite?" After divers remarks about fish, fishing luck and everything connected with the fishing sport, he punctuated his final decision by throwing an empty cigarette box into the water with no little show of temper. As the box lit there was a slight riffle on the surface, then something happened—

It looked as if an unseen hand had reached out of the depths and punched the empty box a vigorous jab; it went into the air some four feet. The angler was astonished. He watched the colored box float away, suddenly something rose and lunged at it again. This time he saw it all. It was a big, black bass that had smashed up through the surface and hit the vari-colored box with such vigor. This gave him an idea, from which originated the use of artificial minnows as a bait for game fish.

This incident showed that a quest for food was not the only incentive that impelled game fish to bite; but the lust for play or fight was an inherent instinct in the fish, the

same as is known to be the case with other creatures in the animal kingdom.

From this simple beginning the cigarette box soon assumed a beautiful, graceful, minnow-like form in divers sizes, colors, shapes—all designed to more quickly excite this propensity on the part of game fish. The development, of course, was gradual and many years passed from the time the first crude block of wood covered with its coat of house paint with the hooks suspended in any way, to the real work of art evidenced in the minnows now being manufactured.

The Art of Casting:

And, when we say art, we say it with a full appreciation of what the term implies. Being able to cast a lure, light and fluffy as the Buck-Tail Fly, a bait heavy and unwieldy as is the case with most forms of live bait, or to cast a compact, non-resisting bait such as an artificial minnow; to cast any of these lures against the wind, with the wind, or diagonally into the wind and to cast 30, 40, 80, or 100 feet, and to do all this with a precision that verges nigh on to bulls-eye accuracy, is, in a word, art. It should be understood, however, that the skill of the expert is not necessary for ordinary practical fishing. We have seen beginners catch nice strings of fish under favorable conditions, but naturally everyone wants to get out of the "beginners" class as soon as possible.

Therefore, if perchance, one may have had trouble attaining the proficiency in casting that he thought would be his after a few trials, the caster can well console himself with the fact that casting is, in truth, an art and the attainment of perfection no trifle. We believe that perfection in casting can be summed up and stated in the use of four P's—

Patience, Practice, Precision and Perseverance.

Endless pages have been written on what to do and not to do in bait casting, but here we will try to boil it down to a few practical hints and in reading these remember that perfection in casting is simply a matter of how well you remember and how intensely you apply the four P's—Patience, Practice, Precision, and Perseverance.

The Creator gave you a wrist, supple, quick and active; a forearm, with its power to grip and an upper-arm, with its muscles for pushing and pulling. The wrist and forearm were given you for casting; the upper arm for holding the fish—remember that, always.

Casting, practically speaking, should be accomplished from the elbow down; this is really the only part of the arm that should be brought into play. Many authorities even go so far as to advocate strapping the beginner's upper-arm to the body in order to confine all the action to the fore-arm and wrist.

Casting consists of five distinct operations—the backward stroke, the forward stroke, a short period of waiting for the bait to carry out, shifting the rod to the other hand and, finally, retrieving.

One's success, of course, depends a great deal on the tackle—the reel, the rod, the line and the lure. To a large extent the types in these five factors vary according to the style of work the caster is attempting to do.

A heavy lure can be worked successfully with a slow-acting, heavy rod and a stiff-running reel with heavy line. On the other hand a light lure necessitates a free-running reel, a light line and a quick-acting rod—by quick acting we mean what anglers usually term "whip" or resiliency. All factors dove-tail in, one with another, so that the caster must adapt his tackle to fit the class of work he wants

This is why so many seasoned anglers always carry two complete outfits with them in the boat. One consists usually of a rather long, light rod and a soft braid line for casting light lures, such as Buck-tails, spinner hooks, flies

and pork strips; the other a shorter, heavier rod and stronger line for heavier baits such as wooden minnows, frogs, and surface plugs.

With your outfit all rigged up you get into your boat, then seat yourself with an idea of being just as comfortable as you can. You must not think casting is hard work, so settle yourself as if you intended to take it easy and fully enjoy a most pleasant recreation.

Note that we lay stress on SITTING DOWN; in casting from a boat a caster should never attempt to stand—it is, above all, bad form; it is awkward; it is tiring and it is dangerous because the general run of fishing boats were not built for promenading. Anyway, there is no excuse for one's standing up; so sit down and enjoy yourself more for it.

Now you are ready to cast. Wind your bait up to within three or four inches from the tip of your rod. Beware of winding it up so closely that the metal part of the bait strikes the agate tip—it may mean a broken agate, a cut line and a lost fish.

Aside from this a few inches of line between the tip and the lure is necessary to get sufficient whip action in the end of the rod when making a back stroke.

Here now you should exercise caution in the other direction—do not leave too much line between the tip and the lure, as too much may permit of your bait looping the end of the rod. Watch this and it may save you the embarrassment of throwing your rod in the lake.

Therefore, reemmber this—watch it always; let the question of winding your bait with caution become a matter of "second nature" with you.

Now, ready for the back stroke, let us say that the only reason nature provided you with a shoulder for casting work was that you could use it as a guide for the path through which your rod must travel in making the back stroke correctly.

Go straight back with the rod over the shoulder, the hand at the shoulder, elbow down close to the body. Let this be your "form" at all times, to be changed only when conditions such as casting under over-hanging limbs and the like necessitates variation.

By bringing the rod back over the shoulder and again forward in the same path you at once eliminate all uncertainty as to accuracy, side-wise or laterally, forgetting of course, for the time being, the calculations that must be made for wind, etc. Let the rod go straight back over your shoulder and then bring it forward with both wrist and forearm movement, pointing straight toward, but a little above, the spot you wish to hit; your bait will fly just as true as it is natural for you to point straight.

Now analyze this action—you will see that during both forward and backward strokes it keeps your bait in a perpendicular plane with your arms and rod acting as a sweeping radius. This is your casting territory and by staying in it, in this manner, you will not imperil the eyes, ears, and other parts of your companion's anatomy. You can cast to either side of the boat from your original position; your territorial efficiency is nearly double that which it would be should you cast in any manner, other than over the shoulder. Therefore, does it not seem best to learn the over-the-shoulder swing? We are of the opinion that this overhead cast is easier to learn first than the side cast anyway.

Try to make your movements smooth and easy, avoid jerkiness and straining. Make your rod do the throwing rather than your arm, and, lastly, don't try so much for distance, but to get accuracy. Distance will come gradually without any effort and when you find a need to cast far you will do it without actually giving the distance a thought.

In starting the back stroke, one's thumb should be placed firmly on the spool of the reel—you must hold it so that your bait will not start until you are ready it should.

Bring the rod back as described above with a quick motion, hinging at the elbow and bending the wrist freely. This back stroke should be made with just enough snap to create a bend or "whip" in the rod and remember the greater part of the motion of the rod is secured by the action of the wrist.

The forward stroke is accomplished by bringing the hand forward through the same arc you make on the back stroke. Most of the action should be accomplished in the wrist, "flip-like" seems to describe it best. The thumb is then released from the spool and the bait is started out toward the spot at which you are aiming. The fore-arm is then brought forward and the top of the rod held, point fairly well up, while the line is allowed to run out until the bait strikes the water or until the caster stops it by thumbing the reel. As the line travels out and "settles" toward the surface the rod tip should be lowered and allowed to follow the line. It is well to turn the palm of the hand down a little at the finish of the stroke so that the reel handle grip is pointed almost, but not quite, straight up in the air. This permits a freer action of the wrist and also tends to make the line run more freely through the guides.

From the instant the caster releases his thumb from The reel spool at the beginning of the forward stroke, he must carefully "thumb" his line, with a constantly changing pressure. This is done so as to regulate the speed at which the bait is traveling. If this is not done properly the reel, due to the excessive impetus caused by starting the bait, will travel faster than the line is being carried out and result in the angler's abomination, the back-lash. This instruction applies to ordinary reels. With the South Bend Anti-Back-Lash Reel the "thumbing" care is unnecessary as the reel is constructed so as to save the caster this attention, and for this reason it is used even by experts for night casting when the largest fish are often caught.

Some time between the starting of the bait, at the be-

ginning of the forward stroke, and the time when the bait strikes the water, the caster must shift the rod from his casting hand to the other hand, ready for retrieving. Now let this sink in deeply: The caster should have made this shift and be ready to have the bait moving back toward him the very instant it touches the water—here lies much of the secret of success, the secret of making them strike. It all hinges on one's ability to make the bait look "live" and full of action the very instant it touches the water. More strikes are "coaxed" in this little instant of correct bait action than are ever created by yards and yards of the most careful reeling.

In retrieving, hold the rod in the hand which has been idle up to this point—gripping it a little above the reel with the thumb and index finger on the line so it can be "spooled" evenly.

As the barefoot boy was inclined to jerk vigorously at the slightest indication of a nibble, so the caster by instinct, probably, will be prompted to jerk immediately he feels a fish strike. However, it must be remembered that striking a fish is not so much a matter of force and strength as it is of dexterity and quickness. So the angler must learn to respond quickly and snappily in answer to the slightest signal that his quarry is ready to fight. Care should be taken in this respect if you wish to "kill" a maximum number of hits and still keep your outfit intact.

All these factors mentioned may seem small each in itself, but remember it is trifles that make perfection and perfection is no trifle. So, be patient, practice; be precise and persevere, and in a surprisingly short time you will be known as belonging in the expert class in the art of Bait Casting.

Special Baits for Muskellunge:

"King of the waters," this game fish is called, and rightly does he deserve this honorary nickname. No better fighter ever rose to the angler's lure. He rushes

through the water like a shadowy streak and when he strikes!—Oh boy! Mr. Muskie goes right after your bait just like he was bent upon swallowing not only the lure, but the rod and reel as well and you too if he should be able to drag you in. And he certainly tries to drag one in. He fights with a vengeance every inch of the way and is not your fish until absolutely in the boat, and even then he may spring a surprise on you and get away.

The writer knows of no better Muskie Trolling Minnow than those put out by the South Bend people, which have given general satisfaction so far as we can learn.

Their Muskie Trolling Min-Buck is also a well made and reliable bait for trolling, and the Buck-tail spoons are especially adapted for trolling purposes in the larger sizes, while the smaller ones may be used for casting. They are well-proportioned and designed so that you need have no fear of any part breaking at the critical moment. This reassurance is worth a good deal to the angler.

There are other more or less dependable lures on the market for Muskie fishing and some of them are very good, but the above are given prominence because of their known reliability. Lack of space forbids us describing all the many lures on the market, hence we have endeavored to describe only representative baits in each class of fishing. This is not intended to detract in any way from the merits the other baits possess.

Dependable Lures:

A dandy surface bait, the proportions of the body, weight, trimmings, etc., of which are exactly right, is the South Bend Surf-Oreno, and is a lure that has met with great success wherever used. It floats at all times, rides high in the water and the commotion and churning of the water, caused by the revolving spinners, is a great game-fish attraction.

Another South Bend product is their splendid Surface Minnows, designed especially for surface work. It has proven to be a very good bait. The tail treble and underhung gang meet the strike in a very effective manner. This feature, and the attractive colors combine to make a very efficient fish-getter.

The South Bend Weedless Surface Minnows are dependable to bring results, as well as are their other designs of weedless baits.

Probably the best bait, at least the most popular bait, they produce is the famous South Bend Bass-Oreno, many anglers claiming it is the greatest fish-getter ever made. It is a wobbler type of bait that dives, dashes, darts and wiggles, in the same manner an injured fish would act. It has an erratic motion, which is probably the reason it is so successful. It is unexcelled for Pike, Muskie, Bass and Pickerel.

Their under-water baits are equally as effective. The Under-Water Minnows Three Treble being a perfect minnow for casting or trolling. They are equipped with a spinner in both front and rear. Treble hooks are attached with countersunk screw-eye. The trebles are removable by simply unscrewing them. Then they make a bait called Weedless Under-Water Minnows, and one called Under-Water Minnows—Five Treble, which also deliver the goods. Their combination Minnow with buck tail, having one treble hook, is good for use in comparatively weedy water. It is an excellent river bait. The buck-tail masks the hook.

Then in the matter of Buck-tail and Trout Flies these people put out as good stuff as can be obtained anywhere. Their spinners, Buck-tail single hooks, etc, etc., are all of the very best workmanship and best of all they produce the desired results. That is the best we could say for anybody's tackle.—From Days of Real Sport.

CULTURE OF RAINBOW TROUT AND BROOK TROUT IN PONDS:

The U. S. Department of Commerce, Bureau of Fisheries, has furnished us the following data in regard to the culture of Rainbow and Brook trout in ponds. This data was prepared by Glen C. Leach, Assistant in charge of Division of Fish Culture, U. S. Bureau of Fisheries:

"The information herein given has been prepared for the use of persons who may be in a position to propagate trout under the more or less natural conditions existing in farm ponds or other waters of a somewhat similar character. To this has been added a chapter on intensive pond culture for the benefit of those whose operations must necessarily be confined to a limited area.

"The fact is recognized that individuals engaged in the business of farming or stock raising have not the necessary time to devote to intensive fish culture. At the same time there are, doubtless, many who would find it possible, at trifling expense, to convert into trout ponds land areas which are at present unproductive, either by the damming of a ravine or the diversion of water from some neighboring stream into a suitable inclosure.

Water Supply—Volume, Quality and Temperature:

"The first and most important requisite in such an undertaking is the water supply. It should be derived from springs or a spring-fed brook; it must be of suitable volume and temperature, and its source must be so located that a constant gravity flow into the proposed pond is assured. Ponds used for the watering of farm animals should not be stocked with trout, unless the stock can be confined to a certain portion of the pond by a fence, preferably near the outlet, as successful results can not be expected where the water is liable to become roiled or contaminated. However, trout ponds can safely be used as a source of supply for ice. The best results may be expected if the source of

water is a spring or lake, and if from the latter the water should be taken from below the surface in order to afford a more even temperature Alkali water and water from forests showing discoloration and traces of tannin are not suitable.

"The flow of water requisite in a fishpond will vary with the nature of the soil, the species propagated, and the water temperature. Soils containing a good deal of sand will lose water through seepage, making it essential to provide for a larger inflow in order to maintain the pond level.

"Under ordinary conditions the rainbow trout, because of its ability to withstand a higher temperature and a more sluggish water circulation, will yield better results in ponds than the brook trout. The brook trout thrives best in a swift current fed by cold springs, and attains its maximum excellence in streams. However, an exception is found in certain lakes in Colorado, where the introduced brook trout attains its largest size. Assuming that it is desired to carry 1,000 yearling trout in a 1-acre pond fed from a spring or brook, a flow of from 150 to 200 gallons per minute will be sufficient, provided the temperature of the water at the point where it enters the pond does not exceed 60 degrees F. during the summer months. Trout confined in small streams with a strong flow will withstand a temperature of 70 degrees without harm.

"If the water supply to the proposed pond is from a spring, it should first flow into a reservoir and thence through an open raceway into the pond. This will permit it to throw off injurious gases and acquire the normal amount of oxygen. Logs placed across this open conduit at frequent intervals will provide the riffles necessary for varying the flow, thus approaching natural conditions. The water is allowed to pass over them, although no harm will result if it occasionally flows underneath. Rocks also may be used to accomplish the desired end.

If a stream is to be the source of supply, a screen, so

constructed that it can not be washed out during freshets, should be inserted in the intake to keep undesirable fishes out of the pond. For the diversion of the water from the stream to the pond it will be found necessary in many cases to construct a small dam which should be located from 10 to 20 feet downstream from the point of intake. It should be the exact height required to accomplish the desired object and strong enough to withstand flood waters. Make the intake sufficiently wide and deep to accommodate the flow to the pond, and for its protection install below its mouth a slat rack placed at an angle of approximately 60 degrees and facing downstream. In this position the water will flow past the outside edge and return to the rack, causing most of the floating debris and ice to pass instead of lodging against it.

"For the interception of floating particles a galvanized iron screen with 3 to 4 meshes to the inch, is installed on a frame set from 18 to 24 inches back of the rack. The gate is placed 12 to 18 inches below the screen and is used to regulate the flow of water.

Selection of The Pond Site:

"Care should be taken to choose a location that will be free from inundation and surface drainage. If possible, sandy, or porous soil should be avoided; but, if there is no alternative, the bottom of the pond may be covered to a depth of from 4 to 5 inches with clay, which should be spread evenly over the bottom with a garden rake. Water is then turned on and the clay is tamped and puddled until it is impervious to water. If the trout are to be held under natural conditions, gravel and sand should be placed on top of the clay near the intake and around the shores of the pond to a depth of 18 to 36 inches below the water surface.

"If the pond can be located a few hundred feet below the intake, making practicable a supply ditch several feet wide and 6 to 18 inches deep, a most excellent spawning

place for the fish may be provided by varying the depth of the conduit at frequent intervals, so that the current will form eddies and ripples, and by covering the bottom to a depth of several inches with sand and gravel. At the approach of the spawning season the fish will ascend this passage and lay their eggs among the hollows formed, and, as they prefer swift water for spawning, no harm will result if there is a current of 3 to 4 miles an hour. A raceway so constructed will afford a better control of the fish and prove very convenient as a storage place when it is necessary to handle them or to clean the pond.

"Ponds are usually drawn for the purpose of assorting or reducing the stock, cleaning, removing objectionable fishes, and for the elimination of surplus vegetation. They should never be completely drained unless the fish can first be transferred to some suitable reservoir where they will have an abundant supply of good water.

Construction of Pond:

"The mode of procedure in building a trout pond will vary with the physical characteristics of the site and the amount of money to be expended in the project. A trout pond should be rather broad and deep at one end, tapering toward a long narrow neck at the supply, with the view of providing for a decided current throughout a portion of its extent. This form of construction will apply to the average pond made by placing a dam across a small ravine or gully. Its size will of course, be governed in the majority of instances by the contour of the site, its location with reference to the source of water supply, and the amount of water available. It should be no larger than will admit of its complete control in drawing off the water and handling the fish. The size under most conditions will probably be between 1 and 2 acres. On the other hand, it should not be too small. A pond of less than an acre in area is apt to become overstocked in a few years, especially where the

larger fish are not removed, and the resulting shortage of natural food will necessitate artificial feeding, an important factor for consideration.

"A pond may be located in a ravine, necessitating only the erection of a dam. If the ravine is subject to heavy freshets, it will be best to construct the dam of masonry or heavy timbers, at least at its crest, and a spillway must be provided and screened to prevent the escape of the fish. In this latter particular great precaution must be exercised, because if the screening is improperly done there will be great danger of its clogging with ice and debris during flood periods, resulting in damage to the pond.

"Ponds that are wholly or partly surrounded by trees are desirable in many respects. If possible, the ponds should be shaded during the summer months; but this does not mean that they must be entirely void of sunlight, as that is an important factor in the production of small aquatic animal life. If surface water is strongly discolored by decayed vegetation or contains other deleterious matter, it should not be permitted to enter the pond. Small trenches cut around the sides of the pond will usually be found valuable in carrying surface water to a waste ditch. In the fall of the year care should be taken to keep the pond free of leaves as far as possible, as they will cause considerable trouble on the inlet and outlet screens.

"Ponds should be so constructed that the overflow may be conducted to a similar pond at a lower level. The water may be used over a number of times by giving it a fall of at least 12 inches, so that it will become aerated before entering another pond.

"If the pond is slightly lower than the source of the water, the natural surface of the ground may form the bottom of the pond. In that case the embankment may be of earth, but in order to provide for a firm foundation an excavation of at least one foot lower than the pond bottom should be made where the embankment is to extend. In a

region where muskrats occur it is advisable to place wire screening in the embankment, extending it about 1 foot above and 2 feet below the water level, and burying it in a bank to a depth of 6 inches. For this purpose extra-heavy poultry wire or close mesh stock-fence wire will answer. Excavating is not to be recommended if the earth required for the embankment can be otherwise obtained.

"The inside slope of an earth embankment should be approximately 18 inches horizontal to 1 foot vertical, the exact proportion varying somewhat with the nature of the soil. The outside slopes may be 1 to 1, and after settling, they should be sodded. The thickness of an embankment at the water level should never be less than the depth of the water. For small ponds the top should be at least 3 feet across, and not less than 6 feet where the pond is large enough to admit of considerable wave action. No underbrush, logs, or other materials subject to decay should enter into an embankment, but imperishable substances, such as rocks, may be used. The filling should not be undertaken in sections, but should progress by layers over the full width of the embankment. If acquatic vegetation cannot be obtained for planting near the water edge, that portion may be rip-rapped with rocks to prevent washing by waves.

"The depth of the pond must depend on the climate. In regions where little or no frost is encountered, a water depth of 5 feet is sufficient, but in northern latitudes it should be from 10 to 12 feet. The outlet may be of lumber or of cement.

"If spring water is the main source of supply, it may freeze sufficiently to harm the fish. Under this condition the deepest part of the pond need not be more than 5 feet. If the pond has a good supply of water, no harm will result from surface freezing so long as the outlet is kept open. The extreme depths given are for such ponds as have a very limited supply and are apt to freeze to a considerable depth.

"The outlet is a three-sided box extending into the bank. In this position it can be reached easily from the shore by means of a board walk laid from the top of the bank to the top of the overflow box. The size of the box will be determined by the flow of water. For a pond discharging from 200 to 500 gallons per minute it should be 24 inches square, its depth being, of course, conditional on the water level and the height of the embankment. The bottom of the box should extend to the deepest part of the pond, and its top should be flush with the top of the embankment. At the bottom a terra-cotta pipe is laid with cement joints extending through the earth embankment, and a slotted groove or frame of 2-inch material is fastened 12 inches from the rear of the box to hold the dam boards, the latter to be 1 1-2 or 2 inch lumber from 6 to 8 inches wide, each provided with two holes from three-fourths to one inch in diameter and three-fourths of an inch deep on one side to facilitate removal by inserting therein a hook or the teeth of a garden rake.

"Inserted in front of the dam boards on the outer edge of the box is a screen in either one or two sections. It is made to work up and down in a groove, and, in order that its lower edge may closely fit the bottom of the box, the latter is provided with a floor, and sheet piling is driven down in front of it to prevent undermining. In front of the drain box, and with its bottom sloping toward it, is the "kettle" or basin, made by excavating in front of the drain box, so that in drawing down the pond all the water will flow to this low point. The upper end of the "kettle" should be a foot lower than the bottom of the pond proper. A kettle for a 1-acre pond should be about 75 feet long and 15 or 20 feet wide. It is preferable to have its bottom and sides of cement or lumber, but if one does not care to go to that expense the unlined pond bottom will suffice.

"If natural conditions will permit, the water supply should enter the pond through an open ditch or raceway,

the length and breadth of which will depend upon the size of the pond, the amount of water passing through, and the lay of the land. For a pond of 1 acre it may be from 75 to 100 feet long, but if twice as long no harm will result, as more spawning room will be afforded. Generally speaking, the raceway for such a pond should average from 4 to 5 feet wide, but the width must necessarily be governed by the flow of water which should not be more than a foot deep throughout its length. It is immaterial whether the raceway is straight or crooked, but it should have a gravel bottom over its entire length. The water level of the raceway and that of the pond may be the same or different. If the pond level happens to be somewhat lower, a small dam should be inserted in the raceway at the point where it discharges into the pond. The dam may be a plank 6 inches high, which will insure a sufficient water depth in the raceway so that fish jumping the dam will not be frightened. The point where the water falls into the pond should be protected by stone, to prevent washing, and there should be an approach from the pond to the raceway entrance, so that the fish may ascend and jump the falls, which they will readily do during the spawning season. The height of the dam should be so regulated that the fish will not be required to jump more than 7 inches in passing from the pond to the raceway.

"Commencing at the intake, the floor of the pond should start from a featheredge and incline gently toward the kettle in such a way that one-fourth of the bottom area will range in depth from almost nothing to 2 feet. From here the slope downward to the outlet must be gradual and even, abrupt pockets or holes being avoided. In order to facilitate drainage and to assist in collecting the fish in the kettle, there should radiate from it to all parts of the pond three or four shallow channels, which, for a 1-acre pond, should be from 8 to 10 inches deep and from 12 to 16 inches wide.

Aquatic Vegetation:

"In all pond fish-cultural operations aquatic vegetation is a prime necessity. Aside from its extremely important function of purifying the water by taking up the carbonic gas liberated by decomposition and releasing the oxygen so essential to all living organisms, it constitutes a nursery for the development of a most acceptable and necessary fish food in the form of minute organisms, both animals and plants. It furnishes the young fish a means of escape from their enemies, shades them from the sun's rays in warm weather, and the binding of the bottom soil by its roots tends to keep the water clear. Its one objectionable feature is that if allowed to grow too luxuriantly it impedes the movements of the fish and is liable to smother the younger and weaker individuals.

"As soon as the pond is completed and before the fish are introduced therein, it will be advisable to start in it a growth of some of the finer-leaved aquatic plants native to the neighboring streams and lakes. Plants having small foliage are preferable to those with large, regular leaves, because they offer a greater surface expanse for the exchange of gases. On account of their tendency to drive out other forms of plant life, pond lilies are not recommended for fishponds. Cat-tails, grasses, and weeds generally are to some extent beneficial, but it is very essential that they be prevented from spreading over the entire pond.

Desirable Species of Aquatic Plants for Fishponds:

"Such of the plants herein figured or mentioned as are indigenous to local waters may advantageously be utilized by the trout culturist, but, if none of these can be secured, such other native forms as are available may be substituted. Most forms of acquatic vegetation will readily grow from cuttings. Hence the plants may be raked or pulled from

their native waters and merely pressed into the soft soil in the shallow sections of the new pond. During the planting process the bottom of the pond should be covered with water to a depth of 6 inches. Plants may be started in the deep-water sections of a pond by attaching them to a weight and sinking them at the desired spot.

"In many parts of the country the aquatic vegetation in a pond forms such a dense growth in the summer months that the removal of a portion of it once or twice during the season becomes imperative. If the pond is drained for this purpose, the water should be drawn down slowly and the vegetation carefully raked into piles with a garden rake as it appears above the surface, the operator wading out to it in rubber boots. In the event that the pond is drawn late in the fall for seining, not more of the vegetation should be removed than is absolutely necessary to permit the work in hand, as the growth serves to protect the fish during the winter months.

Stocking the Pond:

"When handling fish for stocking a pond, no time is to be lost in making the transfer. Immediately on receipt of the consignment, compare the water temperature in the shipping cans with that of the pond, and if there is a difference of as much as five degrees proceed gradually to equalize the two, by pouring water from the pond into the cans, being careful not to subject the fish to a sudden change in temperature.

"Unless the pond is several acres in area it will not be necessary to scatter the fish at different points, as they will soon scatter throughout its extent. When the introduced stock consists of, say 10,000 small fish from 2 to 5 inches in length, they should be able, in a pond an acre in area and properly stocked with aquatic vegetation, to find sufficient natural food for their sustenance until they have attained the yearling stage, thus obviating artificial feeding; but the natural food in ponds varies so greatly that

no hard-and-fast rule can govern the number of fish it should or may contain.

"After young trout are placed in the pond not much will be seen of them until the warm days of early spring, when they will be observed around the edges and near the outlet.

Feeding The Fish:

"If the natural food resources of the pond appear to be inadequate, the fish may be artificially fed, once a day being sufficient under ordinary conditions. The food may consist of almost any kind of fresh, wholesome meat, mixed with shorts or a low grade flour. At the Federal trout hatcheries in this country livers of beef, sheep, or hogs, and also the lungs of these animals, are used. The meat is run through a chopper and reduced to pieces small enough for the size of the trout to be fed, being cut very fine and all gristle carefully removed when intended for fish not over 2 or 3 inches long. As before stated, however, trout held in suitable ponds seldom require artificial feeding until they have attained the yearling stage.

"A favorite mush is made by stirring wheat shorts or middlings in boiling water until it thickens, adding about the same amount of salt as if seasoning for table use. Just prior to feeding, chopped meat is stirred into the cold mush in such quantities as may be desired up to four-fifths of the whole, the smaller fish requiring a larger proportion of meat than the older ones. It is best not to prepare the meat more than a day or two in advance, and it should be mixed with the mush only as required for immediate use. The mush should always be fed cold, and, as it keeps well even in warm weather in a cool place, enough of it may be made at one time to last for several days. No foul or putrid meat or moldy mush should ever be used.

"In feeding, an attendant throws out a small portion of the food, preferably near the pond outlet, and as he walks

along the banks toward the other end of the pond he scatters the food with his hand or a large spoon, strewing it over as wide a water surface as he can. The fish soon learn to follow him, and are thus prevented from rushing together in a small space and injuring themselves.

"The proper amount of food for a daily ration will depend upon the size of the fish and the prevailing water temperature. A lot of 1,000 rainbow trout ranging from 5 to 6 inches in length, in a water temperature of about 50 to 60 degrees F., will require approximately 4 pounds a day, while an equal number of 8-inch to 12-inch fish, under the same temperature conditions, should have about 12 pounds. As the fish increase in size the food supply must be increased accordingly, but in cold weather the amount consumed will not be as large as during the summer months. The feeding should be done in the late afternoon, so that the fish will acquire the habit of searching for natural food in the pond in the early part of the day.

Pond Capacity:

"On account of the diversity of local conditions, it is very difficult to estimate with any certainty how many fish a pond will maintain. The general statement may be made, however, that a 1-acre pond having a flow of 200 gallons of water per minute at a temperature ranging from 50 to 60 degrees F., should carry from 8,000 to 10,000 yearling trout, provided it is well stocked with aquatic vegetation and the fish are regularly fed. A pond of this capacity possessing the requisites stated, and with the addition of minnows or other small aquatic animal life, should support 1,000 yearlings without the aid of any artificial food.

"Such a pond should support 25,000 fish 3 inches long. and would rear them to the yearling age, although 10,000 3-inch fish would probably produce better results at the end of a year. Stocking a pond with fish is similar to stocking a pasture with stock, and the same care must be

exercised to guard against depleting the natural food. Where there is a shortage in the food supply, the larger trout will prey upon the smaller ones. Owing to their cannibalistic tendency, exceptionally large fish should not be allowed to remain in an inclosure with those of the average size.

Natural Enemies:

"Fish inhabiting a pond, especially the smaller ones, are subject to the depredations of numerous enemies. Many kinds of aquatic birds prey upon them, and eggs and young are consumed by snakes and turtles. Among birds, kingfishers, herons, ducks, and fish hawks are the most persistent poachers. Muskrats do not destroy fish, but make burrows in the pond banks. Galvanized-iron wire screens placed in the pond embankments will prevent the burrowing of muskrats. They may be caught with ordinary steel traps.

Spawning of Trout:

"Under ordinary conditions neither the rainbow trout nor the brook trout will mature earlier than the third year, although where they have the advantage of good ponds and an adequate and suitable food supply it is not exceptional for them to deposit eggs at the end of their second year. Experience at the hatcheries of the Bureau of Fisheries has shown that from 15 to 25 per cent of the female trout in a pond may be expected to spawn during their second year, 60 per cent in the third year, and from 85 to 90 per cent. during each year thereafter up to the seventh, after which it is inadvisable to rely upon them as a source of egg supply. Eggs of the best quality are obtained from fish that are from 3 to 5 years old.

"Two-year old rainbow trout yield from 500 to 800 eggs; at 3 years old and thereafter the average is from 1,000 to 1,200 per fish. Brook trout yield from 150 to 250 eggs at 1 year old, 350 to 600 at 2 years old, and the older

fish produce from 500 to 2,500. At Manchester, Iowa, the eggs hatch in from 30 to 35 days in a water temperature of 50 degrees F., and brook trout in from 35 to 40 days in a temperature of 50 degrees F.

"As a rule, rainbow-trout eggs measure from 225 to 250 per fluid ounce, being considerably larger than those of the brook trout, which range from 325 to 600 per ounce.

"Experience has shown that the fish hatched from a single lot of eggs frequently show such a wide variation in size that at the age of 1 year some individuals will be only four inches long while others will run from 6 to 8 inches. This seems to be an inherent condition and is not easily overcome, but the tendency may be counteracted to a certain extent by sorting the fish as to size from time to time and giving the smaller ones extra food and attention.

"The spawning period of the rainbow trout is affected by geographical location. In the eastern States this fish reproduces between early November and January; in the middle western sections of the United States its spawning season begins late in December and lasts for about three months; while in the Rocky Mountain region and farther west it spawns during a period of about six weeks, commencing in April. Under natural conditions the fish make a kind of nest by throwing up a mound of gravel in the bed of the stream when the current is swift. The eggs float into the gravel mound and lie in its crevices until hatched. The fry remain concealed in the gravel about a month, until the yoke sac is absorbed; they then begin to swim and search for food.

"Bearing these facts in mind, the trout culturist should imitate natural conditions in the arrangement of his pond, providing a raceway with a swift current of water and a gravel bottom and allowing the fish access to it, so that they may deposit their eggs at the proper time of the year. The inlet to the raceway should be at least 4 feet wide and from 75 to 100 feet long, both dimensions to be increas-

ed over those specified where it is possible. With the approach of the spawning season the removal of a large portion of the vegetation in the raceway should be effected.

"What has been said regarding the requirements and care of the rainbow trout will apply with equal force to the brook trout, except that the latter being native to swift mountain streams of the north, with occasional deep pools, will require colder water and a more rapid current. This species grows more slowly than the rainbow trout and does not attain so large a size. It spawns in fall, the season usually beginning in September or October and continuing to the middle of December. Under ordinary conditions the rainbow trout will be found to give greater satisfaction, and the pond culturist who contemplates operations on a small scale is advised to select that species."

Assignment of Fish to Applicants:

The Bureau of Fisheries is prepared to furnish trout to parties who may desire to stock public or private waters, and blanks upon which to make application therefor will be sent to you upon request. Delivery of the trout will be made by the government free of charge to your nearest station as soon as your order is reached.

Winter Camping:

The foremost consideration in planning a winter camping trip is the selection of wearing apparel and camp necessities.

In buying clothing it is of prime importance to select something not so much for its attractiveness as for its warmth-giving qualities. Apparel that will successfully keep off the chill rigors of winter.

It is unnecessary to recommend any particular brand of clothing. There are many good kinds of winter clothing adaptable for camping. The climate in your section, of course, will dictate the weight of it.

To be warm, however, clothing does not necessarily have to be exceedingly heavy. The lighter (if it is the right kind of stuff), the better, for a pound or so off the weight of it makes a great deal of difference to you on long hikes. You will not be burdened down, which is a vital point in a close place. For instance, if you get into a rumpus with a wounded bear, or moose, if your clothing does not impede your movements you will have a much better chance to out-maneuver the animal, and so light clothing may mean in such instances a matter of life and death.

But here is where the best of quality counts. If the apparel is light, the quality must offset the weight. It must be stuff that will withstand the elements in every sense. To this end, it is well to avoid, as far as possible, all cotton clothing. Woolen goods of medium weight is desirable, supplemented by flannel shirts or wool shirts, with turn-down collars. If the climate is especially severe, the shirts should be double-breasted, or double all over, but for a medium cold climate single thickness is sufficient. Flannel underclothing is essential for severe climates. Over this, it is well to wear a medium weight woolen sweater or knitted coat. Buckskin leggings, and moosehide moccasins make good footwear; especially are moccasins desirable if you wish to still-hunt. For the pastime known as still-hunting, you want to select clothing that will not make noises in the woods. Duck and corduroy are of a texture that make these noises when moving about, therefore not practicable for this purpose. Clothing of soft texture is best, then, for hunting in the woods, where the slightest sound serves notice on the quarry that an enemy is approaching and gives the creature timely warning that makes escape easy, much to the dismay and chagrin of the trophy and meat hunter.

Good, warm woolen socks, or stockings, are essential to keep the feet warm. Keeping the extremities warm is a most vital thing. If the moccasins are soft and thin, it is

better to have a specialist in this line put on a double sole for you. This will add to their warmth, durability, and water-proofness.

A soft felt hat, or cap lined inside with fur and having earflaps is good. The head must be kept warm at any cost.

If you wear a felt hat in preference to a cap, don't forget those ears. They are one of your most sensitive organs and if injured by frost-bite you may have lasting cause to regret your carelessness. They may be protected by ear-muffs, which, though a little old-fashioned, are extremely comfortable in severe cold weather Personally, we prefer the hood-cap, which is a cap with attached ear and neck-flap, coming well down under the neck and under the chin. It completely protects the back of the head, the spine at the base of the brain, the ears, etc., which is absolutely necessary to your comfort and health.

The more experienced outdoorsmen do not take along an overcoat, as it is likely to be more in the way than useful. Generally, it impedes walking and free, easy movement, so essential to hunting. The overcoat is quite an unnecessary adjunct, if proper attention has been paid to the other garments.

Mittens are not desirable for obvious reasons. A fingered glove is absolutely necessary. A glove is plenty clumsy at its best, and a mitten is an abomination to a hunter.

Snowshoes come next and are indispensable for camping in the northern wilds of Alaska and Canada, where in winter snow covers the ground the entire season to a depth of many feet.

A sewing kit, containing needles, thread, etc., is a valuable ally to have along. You never know when you're going to rip your trousers, on snag or barb, so be prepared.

If you only contemplate a short trip, say a week, it is not necessary to take along a shaving outfit, as a week's growth of whiskers will do more good than harm in protect-

ing your face from the icy blasts apt to prevail in winter. For more open hunting, where you have a great deal of walking to do, some prefer a sportsman's boot or shoe to the moccasin. This is a matter of taste, and a matter local conditions should dictate.

We come now to the camp outfit proper. First in importance, of course, comes the bed on which during the long winter nights we shall rest our tired and weary "bones." Comfort and warmth are the essentials that go hand-in-hand. If we attain these two requisites, we have succeeded in obtaining a bed admirably suited to our needs. On the market in large outfitters' stores, may be found a varied selection of beds, both simple and combination. The combination bed constitutes also a hammock, shelter tent, and roll-up pack, in which may be carried all the nick-nacks that are needed on the trip. In this way, carrying them does not take up extra space.

Of course, the camp mattress must be waterproof. It is like a bag without ends, in which may be stuffed dry leaves, twigs, moss, etc., making an ideal bed. It has side flaps, made of heavy material that will resist water, the inside lining of which should be of wool, or other very warmth-giving stuff. If properly made, this forms an ideal covering, equal to three or four blankets. Aided by the camp fire, with this outfit the camper should experience none of the cold chills of winter. The fire will not only keep one warm, but is essential in frightening away prowling wolves and other animals, and is proof against these night marauders, for fire is their deadly fear and strikes terror to their hearts. The fiercest animal of the jungle will not venture very near a big brisk camp fire. They have perhaps had this fear instilled into them by some terrible experience in a great forest fire; it is a fear that seems even to have been handed down to them by heredity, and perhaps is. So much for the camp fire. Now let us get back to a discussion of camp equipment.

If you have facilities for taking an extensive outfit, including camp cot, camp stove, etc., of course the roll-pack combination bed would not suffice, unless you prefer to "rough it" instead of trying to purchase every article a luxurious outing would demand. I am offering suggestions for the average outer, recognizing that the average outer is not a millionaire. However, even some millionaires prefer as simple outfits as possible, which do not entail the worry and bother a lot of surplus paraphernalia causes. Hence, it is not only useless to describe the more elaborate things that may be taken on a winter camping trip, but it is unnecessary because the average outer does not wish to be burdened down with the manifold "household duties" such outfits incur. Their wives (if they are married men) have perhaps given them an inkling of the manifold domestic duties to be performed about the home, and they have no further inclinations along this line. What they are after is life as near the primitive as possible to attain, which is the word "simplicity" itself.

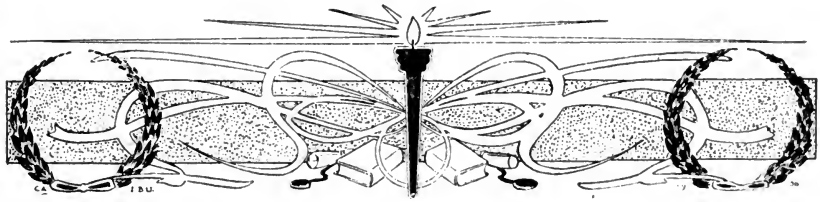
"The greatest care must be used in picking out the essentials, and in eliminating the non-essentials. If the camp is only to be a temporary affair, a sort of wigwam, or tent, and the camper intends moving from place to place, depending upon game signs, etc., then it is inexpedient to take with one more than is absolutely and positively necessary. When this rule is disobeyed, it results in the loss of the greater part of the surplus luggage, for sooner or later the camper will have to sacrifice a part of a too burdensome pack on some long portage or mountain trail, and a little foresight will save him dollars as well as lost energy and much aggravation. If these suggestions are carried out, you will be benefited.

The "Grub":

The word "grub," as here applied, is probably slang, as it really means "to dig," and in another sense means

"the larva of an insect," but it is a term widely used and widely understood to denote food. I have never heard how it came to be called "grub," but believe food was so designated by some wit because we have to "dig" or "work" for what we eat. At any rate, it is a word common to outdoorsmen, and hence here applied in its slang sense, meaning food.

As far as possible avoid canned goods put up in tin. If it is a reliable, commonly used brand it is perhaps safe, but the best canned grub is put up in glass cans or glass jars. Anything put up in glass is said to be safe from contamination, which is not true of tin canned goods in every case. Most anything desired can be obtained in glass jars, for instance, choice bacon, dried beef, sliced ham, olives, pickles, preserves of all kinds, milk, etc., etc. If you pitch camp near a farm-house, butter, eggs, milk, etc., can be readily obtained fresh.



—INTRODUCTORY TO PART TWO—

Stanley Blake, the author of Part Two of this volume, was born in Ohio, removing to Cincinnati to engage in a profession when but a young man. Since his early youth he has been a hunter of note, having hunted in all parts of the United States, both large and small game of all kinds. Always very fond of dogs, it was natural that he should own and breed some of the best dogs America has produced. In his early career, he owned and operated the Highland Kennels, at Newport, Kentucky, later removing to Berry, Kentucky, where he now operates the largest hunting-dog kennels in the world, shipping more dogs than all other kennels in this country combined, THE BLUE GRASS FARM KENNELS, OF BERRY, KY.

He served in the Spanish-American war, and has widely traveled in our island possessions and Mexico. He has been all over the United States and knows hunting conditions, as a whole, probably better than any other American.

He takes a keen interest in everything pertaining to the outdoors, and aside from running the largest kennels in the world, engages in scientific farming and stock-raising. Starting in business on practically nothing, he has made a phenomenal success.

PART TWO

BY STANLEY BLAKE

THE INVENTION OF ARMS AND AMMUNITION:

History tells us that arms and ammunition were invented by a naked savage in the dim ages of the past. The invention, we are told, was made quite by accident. The naked savage was out hunting one day, when suddenly he was confronted by a huge wild beast, that, looking the savage in the eye, licked its great chops in a manner denoting extreme hunger, and started to attack the man. What was the savage to do? An insurmountable cliff cut off any possible avenue of escape. He must face the beast. He had no time to even think what he should do. Instinctively he knew, without weapons of any kind whatsoever, that the beast could easily overpower and make a meal off of him. This was in the dim ages before even the most primitive weapons were in use; nothing had as yet been thought of for defense except human strength unaided by anything else.

Then, as now, the law of self-preservation asserted itself, and in the twinkling of an eye he reached down and grasped a jagged piece of stone and with all his might hurled it straight at the beast's head. His aim was true. The great force with which the savage had hurled the stone sent it crashing against the animal's skull with a noisy impact that sent the beast to his knees in a senseless stupor, giving the naked savage a chance to escape, which he lost no time in taking advantage of. As he sped on his way to

liberty he paused just long enough to congratulate himself upon saving his own life. He knew he had done this. But he had done something else, the magnitude and importance of which his savage brain had absolutely no conception. HE HAD INVENTED ARMS AND AMMUNITION!

After the savage had escaped an untimely death by hurling the stone with mighty force at the brute-beast, he straightway went to the head tribesman and communicated his discovery. No doubt the chief was greatly amazed and much pleased that one of his subjects had dared face the great forest animal and actually knock him to his knees in a dazed condition. No doubt he highly commended the bravery and skill of the naked man. Very likely he called the whole tribe together and publicly acclaimed the gallantry of this daring creature who had so successfully dared to face the great lord of the wilderness, mighty beast.

Of course, once man had really begun to think, after having realized by chance the possibilities of defending oneself, it was but a comparatively short time until he had begun to devise improvements on the ancient method of heaving a stone by main strength of the body-muscles.

Came a time when greater force was desired. A way must be found to cast a stone farther and with greater velocity. How should it be done? That, no doubt, was the burning question of the day, discussed in many a council of war in many a chieftain's wigwam as they were planning to swoop down upon their neighbors in a war of conquest, or a war engendered by natural jealousy and hatred.

One day a great invention was heralded far and wide by excited couriers. A tribesman had invented a weapon whereby a stone could be thrown not only farther and with greater force, but straighter than had been possible before. This came to be known as the sling, and all the tribesmen soon learned to be expert at sling-throwing. This

was the second step in the evolution of modern firearms. To this day slings are used in certain countries, and are in vogue by young boys here in our own country.

The third great step was the invention of the bow and arrow, and the early settlers of America know what a deadly weapon it proved to be in the hands of the bloodthirsty Indians who roamed this country in colonial days.

The bow and arrow made man lord over every beast that roamed the jungle or galloped over the prairies. As time went on it was improved until it could be depended upon to stop the most savage animal. Not only was it employed against dangerous animals, but against the members of other tribes, who vied with each other to see who could invent the most deadly and fearful weapon. This spirit, we regret to add, still thrives, as recently shown in the great world war where every means was employed by the bloody Huns to gain their ends—liquid fire, poison gas, shrapnel, big guns of wonderful range, etc., being freely used in an inhumane and unthought-of barbarous fashion.

The mechanical age at last appeared and the cross-bow was evolved. Every student of history knows the important role the cross-bow has played on down through the ages in many a bloody strife between tribes and between nations.

The cross-bow was developed until it had the appearance of our modern gun. This weapon was perfected in the war between China and Japan.

It was by accident that the first primitive weapon of defense was conceived, and so it was by accident also that another powerful agency was found—an agency whose potent qualities man little knew in those early days.

The age of chemistry was at hand. Two monks conducted experiments in their monastery in an effort to discover a mixture suitable for use to make fire, which was to be thrown on enemy buildings, composed of such ma-

terial as pitch, sulphur, resin, saltpeter, and naptha. From this "Greek fire" was evolved. There is dispute as to who first invented gunpowder, some claiming it was the Chinese, but as China was entirely cut off and remote from the balance of the world, it remained for the other countries to solve the great problem for themselves.

One of the monks, Roger Bacon by name, was laboring one night in his constant endeavors to make a satisfactory "fire" for uses stated above, and on this particular night he used pure instead of impure saltpeter, endeavoring, we can suppose, to get a most violent and longer burning flame. He was busy at his work, watching the progress of the experiments, when suddenly a terrific explosion rent the building. He narrowly escaped death. The investigation proved that pure saltpeter could not be used in the mixture for the purpose of making "fire." Little did he realize that he had really discovered gunpowder. Thus in the thirteenth century Roger Bacon gave to the world that potent agency of destruction now familiarly known throughout the civilized world.

In the opinion of the writer Bacon died not knowing the great importance of his discovery. In later years, a man named Schwartz studied Bacon's works and carried on dangerous investigations of his own, and he was the first man to give to Europe and the world the fruits of the discovery of gunpowder.

Needless to say, it was but a short time until the crossbow and gun-powder had been so improved until the matchlock was produced. Successive generations saw the flint-lock, the early Persian gun, the Scotch wheel-lock, the early Swiss pistols, the Dutch wheel-lock or double-barreled pistol, the wheel-lock rifle, and various other freaks and fancy guns, until the present time when our modern high-power rifles, our perfect shotguns and modern implements of war and peace have attained to a state of perfection never dreamed of by our forefathers.

The sportsmen of this day can thank their lucky stars that they live in a progressive age like this, in peace, security, and contentment, and by the same token they can thank high Heaven they did not live in those early times when "life, liberty, and the pursuit of happiness" was often not attainable—why? Because the weapons of that day had faults that were more than likely to prove the undoing of the hunter and the fighter and could not, therefore, be fully depended upon at all times as can modern arms and ammunition be depended upon in this age.

What a debt of gratitude we owe our forefathers who battled against great odds and finally overcame them, bringing civilization to the New World with all its consequent blessings.

The progress of nations is indeed closely linked with the improvement and efficiency of its firearms.

GUNS AND AMMUNITION:

In the first place, the author desires to state that the following article does not pretend to set itself up as an absolute authority on the difficult question of arms and ammunition for hunting different varieties of game. The choice of arms and ammunition, like taste in neckties, is a question of "many men, many minds." We only wish to point out the more commonly accepted standards and tastes in both arms and ammunition. Even this constitutes problems that the individual must solve for himself to meet his own particular needs and his own peculiar desires. Hence, our remarks on the subject must be purely general in character.

The writer has consulted several experts of national reputation in regard to these matters, and briefly summarizes their opinions below, withholding their names at their request.

The first expert consulted has this to say on the subject:

"Taking first the question of small game; in recent years the use of small gauges such as the 16 and 20 has been constantly increasing, and under certain circumstances they are very suitable and satisfactory. However, sportsmen throughout the world have pinned their faith to 12 gauge Winchester Repeating Shotguns, as the best all-around game guns in the world, as they are suitable not only for wild fowl, but for rabbits, hares, foxes, and all small game.

"The question of suitable loads for water fowl is an open one, due to the difference in the size of the game. They range from the little blue wing teal, which is slightly larger than a quail, up to the big sea duck, or sea coot, weighing from four to five pounds, and protected by a thatch of feathers about an inch thick. For teal, sportsmen have found ordinary number 8 shot satisfactory. This size of shot, naturally, would have very little effect on an armored cruiser of the coast like the sea coot. The goose, duck and such large birds as the swan, require a heavy charge of powder and large shot. For quail and grouse a medium to fairly heavy load of powder, and shot sizes six to eight, has been found effective.

"The wild turkey comes in a class by himself. In certain sections of the South, BB shot is used so universally for this bird that it is known to hunter and storekeeper alike as 'turkey shot.'

"It would be better to eliminate the coon and opossum from the list of small game animals, as they are nocturnal, and are usually killed with a club in any case. The skunk is also nocturnal, and for other and 'strong' reasons it would be wisest to hunt skunk with a high-power, long range rifle.

"The fox is also a special case. In the South he is hunted on horseback with dogs during certain seasons, the good old institution of the hunt still flourishing, and the English sportsman's horror of shooting a fox being a very real thing. In the North, however, the fox is a commer-

cial fur-bearing proposition (when he isn't a chicken thief), and is ruthlessly hunted and trapped. A 12 gauge gun with big shot and a heavy load of powder is preferable when on the trail of Br'er Fox, as his vitality is great and he has an inconvenient habit of crawling into a hole to recover, if his wound is not absolutely fatal.

"The Winchester Model 95 is a famous big game gun, having been used by such eminent hunters as the late Ex-President Roosevelt, with a success that is known to the world. Admiral Peary on his trip to the North Pole, Sir Ernest Shackleton in his explorations in the South, depended upon the Winchester gun to keep their outfits supplied with bear, seal and walrus meat and hides. The ammunition used by the Model 95 is most powerful, especially the .405 W. C. F. and the .30 Government M-06 cartridges, which have exceptional range and remarkable shocking effect.

"A light weight rifle handling very powerful cartridges is the Winchester M-94. This gun is of the tubular magazine type, and is operated by a finger lever under the receiver. It is quite powerful enough for such game as mountain lion, wild cat and deer, although it is not quite as effective at long range as the M-95. But when every ounce counts, as in difficult and wearying journeys and mountain climbing, the M-94 has given great satisfaction.

"However good an arm may be on leaving the factory, the only way to keep it in working condition is to clean it after every using. Never allow your gun to go over night without being cleaned. If you take care of it carefully it will never fail you in one of those crucial moments when failure may mean great disappointment or even life itself to the hunter.

"Some men never clean their guns properly and get away with it, but they are taking a big chance and never have the satisfaction of being absolutely safe. Especially is this true in the matter of oiling. You may neglect some

other process and be saved by your rabbit's foot, but forget to oil your gun and sooner or later you will be thoroughly punished for your neglect, and moreover you will have to buy a new gun.

"A gun is apt to be just as good as the care that is taken of it; the Winchester Company, realizing this, have specialized on a line of metal cleaning and preserving preparations especially adapted to their own arms."

Another expert, when asked for his opinions concerning arms and ammunition for the various game animals and birds, had this to say:

"The best gun for all small game shooting is the modern 12 gauge and the most popular models are the autoloading and pump action. For shooting quail, grouse, and other upland game birds a gun bored modified choke is the most satisfactory. For shooting ducks and geese, and also for shooting turkeys, the gun should be bored full choke.

"For shooting rabbits, including the varying hare, likewise for shooting various kinds of vermin, such as hawks, the modified choke bore is most satisfactory. For shooting foxes, a full choke gun should be used and shells loaded with No. 3 or No. 2 buckshot. No. 3 shot is the right size for turkeys. The latter load is also satisfactory for shooting coons, skunks, 'possums, and other small animals, including wild cats.

"For shooting big game, the Remington autoloading rifle is a favorite, but the Remington slide-action model is also very popular. These rifles are made in the following calibers—.25 Remington, .30 Remington, .32 Remington, .35 Remington. The latter cartridge is the most powerful and the best adapted for the larger game animals such as Alaskan brown and grizzly bears and for moose. The other cartridges are popular for shooting moose, caribou, deer, goats, and sheep, depending upon the individual preference of the shooter. We find the .30 caliber to be the most popular all around cartridge."

Still another expert offers the following information on the subject:

"It would be impossible for me to lay down any definite rules along this line because there is a wide difference in opinion among sportsmen and what one man considers just the proper load for a given purpose, other shooters regard as by no means the best. It all depends upon conditions and individual preference. Of course the 12 gauge shotgun is still more largely used than any other, although the 20 gauge, 28 gauge and .410 are growing rapidly in popular favor for shooting small birds and animals."

The Care of Firearms:

Several authorities were consulted on the care of firearms, and replied as follows:

"In the early days of gun-making, firearms were very crude affairs. The barrels were smooth bore, or approximately so, because in those days gun making machinery was also very crude and the interiors of the barrels of the guns made for many years were not even as smooth as in the poorest and cheapest shotguns made today. There was no way of looking through the barrel, for there was no opening at the breech, except a small passage from the flash pan where the priming charge was placed. These guns were inaccurate as compared with modern firearms and it really did not make much difference whether the barrel was carefully cleaned or not since they would not shoot straight anyway.

"Modern firearms, such as Remington U M C shotguns and rifles, are splendid examples of present day mechanical genius. While efficient in the highest degree, when judged as pieces of machinery, they are yet extremely simple in construction.

"The possession of a Remington gun or rifle inspires its owner with a desire to keep it in the perfect mechanical

condition in which he received it from the factory. Too many men, because they are not familiar with the proper methods of cleaning their guns, finally discard them because of rust and corrosion.

"A rifle or shotgun will last the shooter a lifetime and always give as good results as when first used if it be a good one and is cared for properly.

"It is absolutely necessary to clean a firearm as soon after shooting as possible, to keep it in perfect condition. Aside from the fact that the sooner you clean out the fouling the less time it has to act on the steel of the barrel, it is well known that the fouling, after any considerable length of time, becomes sticky and hard and requires more work to remove than if the cleaning is done within, say, a half-hour after the last shot is fired.

"Always clean the barrel from the breech; if cleaned from the muzzle the dirt is pushed back into the action, and the cleaning rod is apt to wear or burr the muzzle of the barrel and spoil its accuracy. Remington U M C firearms are all made so that they can be cleaned from the breech.

"Never use emery in a rifle barrel. It will destroy the rifling, enlarge the bore and ruin its accuracy.

Shotgun Barrels:

"It seems as though the tendency of any rifle or shotgun barrel to rust and corrode depends to some extent upon the breech pressure and the temperature generated by the explosion of the powder. Shotgun barrels, owing to the comparatively low breech pressures which they produce, are not so sensitive to rust or corrosion as rifle or revolver barrels. Care in cleaning however, is well worth while for there is a vast difference in evenness of pattern and uniform shooting qualities of a barrel in perfect condition and a rusty foul one.

"As all shotgun barrels will lead more or less, depending on the rapidity with which they are shot and weather

conditions, we strongly recommend the use of a soft brass cleaner, either the bristle type, or the woven wire type. Do not use the iron wire brushes usually furnished with jointed, wooden cleaning rods as the continued use of these iron brushes for ordinary cleaning will spoil the polished surface of the bore. Such brushes are useful only for cases of severe rust.

"The following procedure will keep your barrel in perfect condition, provided, of course, it was not rusty before you started shooting:

"Scrub the barrel thoroughly with a brass cleaner which has been oiled with Rem Oil. Allow it to stand for a few minutes, then run through several dry cloth patches and finish up with one which has been saturated with Rem Oil. You may now safely lay away your shotgun with the assurance that it will stay in perfect condition unless you leave it where it is exposed to moisture.

.22 Caliber Rifle Barrels:

"To clean .22 caliber rifle barrels and other low power sizes, scrub with a soft brass bristle brush soaked with Rem Oil. Follow with four or five pieces of cloth, every other one saturated with Rem Oil. Have the last one fit a bit looser than the others, and have as much Rem Oil on it as possible so as to leave a good coating on the inside of the barrel. Smokeless powder used in .22 caliber rifles is more liable to cause rust than less smoke. To get the best results when smokeless powder is used, clean immediately or just as soon as possible after firing the last shot.

"If the rifle barrel becomes leaded and a brass bristle brush fails to remove the lead, it may be cleaned by running quicksilver through it. The lead will amalgamate with the quicksilver. Plug one end of the barrel and put in the quicksilver, the other end to be held with the finger and the barrel turned end to end, rolling occasionally so that all the surface will be reached by the quicksilver. If

this treatment does not remove the leading, the barrel should be returned to our factory where we can remove it, unless the interior of the barrel is too badly pitted or rusted, in which case a new barrel will be required.

High Power Rifle Barrels:

"Procedure for high power rifle barrels using metal jacketed bullets is the same as for .22 caliber rifle barrels except that a second cleaning one day later is necessary.

"Sometimes parts of the metal jacket of the bullet will adhere to the lands or grooves of the high power rifle barrel. This condition is known as metal fouling and if present only in small quantities can easily be removed by a vigorous rubbing with a cloth patch moistened with a concentrated solution of Ammonium Hydrate.

"If metal fouling is present the patch will come out a deep blue color. Patches with ammonia on them should be run through until one comes out practically colorless. The ammonium hydrate treatment will remove light deposits of metal, but when the fouling is very heavy as is sometimes the case when the barrel has been shot a number of times in rapid succession, we have found the following preparation the best to remove it:

Ammonium Carbonate	200 grains
Ammonium Hydrate	6 ounces
Ammonium Persulphate	1 ounce
Distilled water	4 ounces

"The method of applying is to cork up the breech of the rifle and fit a short section of tubing over the muzzle. The solution is then poured in until it fills the barrel and part of the rubber tube so that the muzzle will be completely covered. The liquid should remain for thirty minutes or an hour, then pour out. This preparation deteriorates with age and is most effective when fresh.

"Care must be taken, if either of the above methods

are used, to thoroughly clean out the inside of the barrel and any metal part which has been wet with the solutions, as if they dry on the steel, they are liable to cause rust. Be careful also not to let the ammonium hydrate solution or the preparation mentioned above touch the wooden stock or forearm as they will remove the finish. The danger from metal fouling arises from the fact that cleaning oil is excluded from barrel surfaces covered by it and rusting is very apt to follow.

Actions and Moving Parts:

"The mechanism of all firearms should be cleaned and lubricated with oil and a thin film rubbed on the outside metal parts to preserve them from rust." The above information on "how to take care of firearms" was taken from the Remington U M C catalogue and incorporated here on account of the intrinsic value of the suggestions, and because the makers of guns are naturally best fitted to know just how they should be taken care of.

ORIGIN OF HUNTING DOGS:

Nothing is definitely known as to the origin of the English Setter, but there is also a lack of trustworthy information regarding the origin of all the other old breeds of dogs.

Some writers of note claim that the English Setter originated in a Spaniel ancestry. To prove their claims, they quote early writers on the subject, of which the following excerpts will show the foundation on which their claims are based:

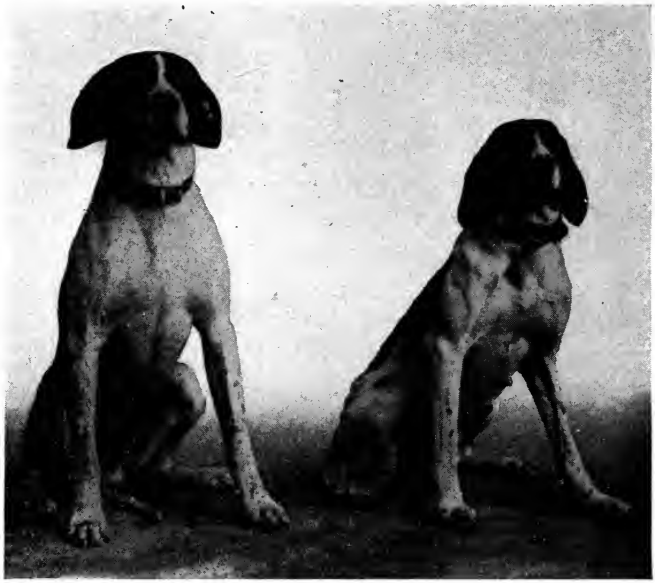
The author, Stonehenge, writing on the subject of "The Dogs of the British Islands" in the year 1867, says:

As some difference of opinion appears to exist with regard to Setters, we have determined thoroughly to satisfy ourselves as to their origin and best form, and we have called all the best authorities to our assistance. We

propose to place the result of our labors before the public, and to add our own conclusions.

There is no doubt that the sport of hawking was known and practiced by the ancient Britons, and that the Roman was totally ignorant of the science; but the invader at once came to the conclusion that the system might be improved, and introduced the Land Spaniel, if not the Water Dog, also, into this country.

These dogs roused the game, and this was all that the hawker required of them in those early days; but in after



"PERFECT POINTERS."

years, as we shall see, dogs were required to point, or, in the language of the quaint old writer, "sodainely stop and fall down upon their bellies," and having so done, when within two or three yards, "then shall your Setter stick, and by no persuasion go further till yourself come in and use your pleasure."

At first, then, without doubt, the Spaniel was merely used as a springer for the hawk, which was subsequently neglected for the net; and the propensity of the dog to pause before making his dash at game was cultivated and cherished, by breeding and selection, until, at last, gratified by observing the action of the net, he yielded his natural impulse of springing at all, and set, or lay down, to permit the net to be drawn over him. After this, the hawker trained his Spaniel to set; then he cast off his hawks, which ascended in circles, and "waited on" until his master roused the quarry from its concealment, when he pounced upon it like a pistol shot.

When used either with hawks or for the net (especially in the latter case), a far heavier dog answered the purpose than what we call a "Highranging Setter." The net enveloped a whole covey in its meshes, and few manors would allow of many coveys being taken in a day; whilst the disentangling the birds, and securing them, allowed time for the heavy dog to rest and regain his wind.

Richard Surflet, who wrote in 1600, gives us the following information. Writing of the Field or Land Spaniel, "of which sith before no author hath fully intreated," he describes him as "gentle, loving, and courteous to man, more than any other sort of dog whatsoever"; and as "loving to hunt the wing of any bird, especially partridge, pheasant, quails, rails, coots, and such like." He tells us we are "to choose him by his shape, beauty, metal, and cunning hunting; his shape being discerned in the good composition of his body, as when he hath a round, thick head, a short nose, a long, well-compast, and hairie eare, broad and syde lips, a cleere red eie, a thick neck, broad breast, short and well-knit joints, round feete, strong cleys (high dew-cley'd), good round ribs, a gaunt bellie, a short, broad backe, a thicke, bushie and long-haired taile, and all his bodie generally long and well-haired. His beautie is discerned in his colour, of which the motleys or piede are the best; whether they be

black-and-white, red-and-white, or liver-hued-and-white; for, to be all of one colour, as all white, or all blacke, or all red, or all liver-hued, without any other spot, is not so comely in the field, although the dogs, notwithstanding, may be of excellent cunning. His mettall is discerned in his free and untired laboursome ranging, beating a field over and over, and not leaving a furrow untrodden, or one unsearched, where any haunt is likely to be hidden; and when he doth it, most coragiously and swiftly, with a wanton playing taile, and a busie labouring nose, neither desisting nor showing less delight in his labour at night than he did in the morning and his cunning hunting is discerned by his casting about heedfully, and running into the wind of the prey he seeketh; by his stillnesse and quietnesse in hunting, without babbling or barking; but when he is upon an assured and certain haunt, by the manner of his ranging, and when he compasseth a whole field about at the first, and after lesneth and lesneth the circumference, till he have trodden every path, and brought the whole circuit to one point; and by his more temperate and leisurely hunting, when he comes to the first scent of the game, sticking upon it, and pricking it out by degrees; not opening or questing by any means, but whimpering and whining to give his master a warning of what he scenteth, and to prepare himself and his hawke for the pleasure he seeketh; and when he is assured of his game, then to quest out loudly and freely."

After describing Spaniels which "delight in plains or the open fields," and others more adapted for covert, he goes on to say: "There is another sort of Land Spannyels which are called Setters, and they differ nothing from the former, but in instruction and obedience, for these must neither hunt, range, nor retaine, more or less, than as the master appointeth, taking the whole limit of whatsoever they do from the eie or hand of their instructor. They must never quest at any time, what occasion soever may happen,

but as being dogs without voices, so they must hunt close and mute. And when they come upon the haunt of that they hunt, they shall sodainely stop and fall down upon their bellies, and so leisurely creep by degrees to the game till they come within two or three yards thereof, or so neare that they can not press nearer without danger of retrieving. Then shall your Setter stick, and by no persuasion go further till yourself come in and use your pleasure. Now the dogs which are to be made for this pleasure should be the most principall, best, and lustiest Spannyel you can get, both of good scent and good courage, yet young, and as little as may be made acquainteed with much hunting."

There is no doubt that the Setter is a Spaniel, brought by a variety of crosses (or rather, let us say, of careful selections) to the size and form in which we now find him. He is the most national of all our shooting dogs, and certainly has existed for four centuries. His form probably has improved.

Stonehenge, in another part of his works, says that "About the year 1555, a duke of Northumberland trained one (he was writing on the Sussex Spaniel) 'to set birds for the net;' and soon afterward the Setter was produced, either by selection or by crossing the Talbot Hound and Spaniel."

Another noted writer of his day was Laverack, who, writing on "The Setter," states:

"I am of the opinion that all Setters have more or less originally sprung from our various strains of Spaniels, and I believe most breeders of any note agree that the Setter is nothing more than a setting Spaniel. How the Setter attained his sufficiency of point is difficult to account for, and I leave that question to wiser heads than mine to determine. The Setter is said and acknowledged, by authorities of long standing, to be of greater antiquity than the Pointer. If this is true, and I believe it is, the Setter can not at first have been crossed with the Pointer to render him what he is."

If such men as Laverack could not fathom the depths of the mystery surrounding the origin of the Setter dog, the reader will pardon us for candidly admitting our inability to do so. Therefore, let us leave off as we began—there is nothing definitely known as to the origin of the English Setter, which is also true of all the other older breeds of dogs.

We could quote the writings of early authors on the possible origin of all the other old breeds of hunting dogs, but this would be imposing upon your time and patience, inas much as we would have established nothing for a surety at the end, so we will allow our remarks and quotations on the English Setter to answer for the other older breeds of hunting dogs.

Big Game Hunting:

This is a fascinating subject—one upon which we like to write—but we must admit there is intermingled with our feelings a sense of regret, of sadness, because the big game of the United States is really and truly well-nigh a passing memory, an episode in the evolution of our progress as a nation that is almost dead and gone—forever.

But a ray of sunshine and hope gleams through the dark clouds of despair—for there is Canada and Alaska yet—big game's last retreat in North America. We turn, then, hopefully to the North, to the great virgin forests and waste-places as yet practically untouched and untrod by man.

When our forefathers came across the seas to this country there was not only game of all kinds in abundance, but there existed an actual over-supply. Subsequently, the different colonies (and later the various States) found it necessary to offer bounties for the pelts of the different species of game animals that proved a source of annoyance to the early settlers in their pursuit of life and liberty.

With the steady encroachments of civilization on our wild, each year they have become less plentiful in many

States, and in the great majority have been utterly exterminated. In a few remaining States some species are found in limited numbers.

Wild animals of the larger species have been forced to take up their abode in retreats that man has not yet penetrated to any marked degree because these regions have

Courtesy Canadian Pacific Railway Co.

"A PARTY OF CANADIAN DEER HUNTERS."

been unsuited to man from a climatic standpoint, being either too dry or too cold. Therefore, Canada and Alaska by reason of their geographical positions are the logical modern homes for game that has been driven steadily northward and westward by man with his potent agency of destruction—modern firearms.

So it is that the frigid regions of the North offer the last haven of safety for our big game animals. The climate in years past has proven a tolerably safe barrier of security for them, but even there they are not safe. Hardy sportsmen and natives annually take a heavy toll from their numbers and it only remains a mere matter of time until they will be extinguished if the strong arm of the law, armed with effective conservation legislation, does not intervene and stay their execution.

We, and our neighbor to the North of us, have already enacted some very humane and essential game laws, in fact we have more laws than we have game left to protect, and what we most need at the present moment is not more game laws, but more rigid enforcement of those already on our statute books. This is the crying need of the hour. I say, down with the game hog and market hunter, and all hail to the true sportsmen, whom these protective measures, properly enforced, will really benefit, as is apparent on the face of the proposition. We claim to be living in a progressive age. Then, let's do something that is really progressive. Suppose we make each sportsman a committee of one to see that no game hogs and pot hunters stay around his "neck of the woods" unpunished by law. "In union there is strength," and "United we stand, Divided we fall," are two good mottoes for us to go by, for if all we sportsmen "pull together" and introduce a little "team work" into our efforts, the result will be amazing and gratifying.

As the situation now stands, the sportsman of to-day needs must travel afar to these northern or western abodes of big game if he would not court failure. No longer is it possible for those living in a thickly populated community to go out and bag a bear, a moose, a sheep, a caribou, or a deer, as in days of old, without investing a young fortune in equipment and railroad fare. They must hie away to some remote spot whence the larger game has fled. This inconvenience and expense caused the modern sportsman is di-

rectly the result of the great slaughter encompassed by the damnable and unspeakable game hog and market hunter. But sooner or later the sportsman will not even be able to locate the game he desires by these long trips taken at so much time and expense, for the game hog and market hunter are right on the job all the time, slaughtering and trapping the noble wild creatures in their distant haunts and robbing you of your share of nature's stores. It is easily seen what condition this will eventually bring about. It doesn't take a pessimist to see the end of the beginning in this case. The hand-writing appears on the wall, and it spells nothing less than total extinction in a few more years, if this needless and cruel slaughter is not brought to a halt. I have already pointed out my idea of how to effect this halt —not by enacting more game laws, but by rigidly and diligently enforcing those we already have enacted. That is the only practical solution to the problem, so far as I am able to see.

As to the bear, some folks make the claim he does not deserve protection, accusing him of pilfering the farmer's pigsties, and placing numberless other misdemeanors at his door.

If those making these accusations against bruin will but take the trouble to thoroughly investigate each instance of this kind, they will find that it is not the bear who is to blame for these thefts but the more sly and cunning thief, the sneaking mountain lion. The latter will probably effect the slaughter, devour all he wants of the kill, which, let us presume is a pig, and then bruin will come along, get a scent of fresh meat, go and finish what the lion left, and then Mr. Farmer will come out next morning, see the huge bear tracks, cuss the innocent bear, and perhaps organize a posse of neighbors to help find and kill him for a crime for which the mountain lion, and not he, is responsible. Every student of nature knows a bear will not ordinarily molest any animal, with the exception of small rodents and insects, un-

less himself attacked first. In this case the bear puts up a pretty stiff fight and a convincing argument. I distinctly remember one bear, in particular, that came near getting a close friend of mine.

It was in British Columbia. My pal had gone there to recuperate his health and rouse his drooping spirits in the toxic air of the Canadian Rockies, and he did not let an opportunity slip to accompany anybody on a big game hunt, as there were sportsmen from everywhere stopping there at the big mountain hotel, where my friend was staying.

Now, everybody knows these Canadian bears are dead game fellows and very ferocious when cornered or wounded. Any experienced sportsman who has fought a bear in these northern wilds will tell you that.

Hunting in Canada is indeed a delight to the outer. The scenic beauty of the mountains is enthralling, and the natives have not been idle, but have taken stock of their boundless scenic wealth, and got busy. They have studied Swiss methods and improved upon them; they put business men in charge of affairs and gave them power to do things in a big way. Having railroad prosperity and local business for their object, they planned carefully and executed boldly. Picking out the Lake Louise region as their point of first concentration, they began the establishment of its trademark. They began advertising extensively and thoroughly.

Result? These countries, Switzerland and Canada, to-day share the scenic reputation of the world. It has been estimated that in peace times the Alps draw a hundred million of American dollars a year. Abroad, the Canadian Rockies are supposed to furnish the only scenic beauty in North America worth looking at, and until quite recently it was the fixed belief of most Americans that they excelled anything in the United States. Thousands of citizens of the United States go yearly to the Canadian Rockies for the particular purpose of viewing what they think the most

stupendous thing in the way of scenery in the Western Hemisphere. And of course they think they have seen it, and naturally they come home and spread its fame. British colonies are active, even in these post-war days when the world-at-large has not yet reached a definite peace footing. Quite recently, for instance, an American motion picture bureau received a gift of 25,000 feet of film, largely scenic, from South Africa. But while Canadian mountain scenery is all that is claimed for it, we want to pause to say right here that it is not any more beautiful than our own Rocky Mountain scenery. Even the Swiss Alps may be offset by our Glacier National Park alone. Point for point, Glacier will compete and usually score a triumph. There are many other beautiful national parks and reserves in the United States and in Alaska, but I will not follow this vein of thought further.

I started out to tell you about the experience with the bear my friend related to me, and so here goes. He had no dogs with him, neither had his hunting mate. So they decided to hunt not far distant from each other, for the sake of safety, and for fear of my friend, who was unaccustomed to these game fields, getting lost.

They had scouted around for perhaps an hour among the foothills, but could discern no signs of game, so they decided to go higher. Two hours later found them well up among the smaller trees, and presently my friend John discovered a bear track in the thin layer of snow. Unquestionably the easiest and best way to hunt bears is with thoroughly-trained hounds, or Airedale terriors, or better still—both. Without them, it is an excellent idea to have a companion, for you never know what's in store for you, as this explanation will show. Either way you hunt you apparently have the bear at a great disadvantage. One of the chief reasons for fearing them is that such hugely exaggerated stories are sometimes told as a joke and circulated for the truth about them that some hunters hesitate on this

account to hunt these fiercely fighting northern bears; yet those who have pluck enough to go after them once usually welcome the second opportunity, and this same rule applies to any other wild animal. There are some few hunters who will positively refuse to risk a shot at anything bigger than a titmouse, or where there is the least element of danger from the animal's defense of itself. These fellows are not real sportsmen in the true sense of the word. They are chicken-hearted, and they do not get out of the hunt the sport that they should get. It is the element of danger and excitement that really appeals to the true sportsman; a fighting chance is all he asks on a "give and take" basis. Without the element of danger, excitement or chance, there can be no real sport and no true sportsman.

In half an hour they had crept up on Mr. Bear, who remained quite unaware of their presence, they having approached him up wind. The hunters decided to attack him on two sides, John making a detour to the opposite side of him. The bear was beginning to get suspicious by this time and had evidently scented John. But his natural powers of smell served him too late. Turning away from the direction in which the man scent came to him, he started down wind, unconsciously going right into the vicinity of another man enemy, John's partner. John whistled a warning signal to the other fellow, and himself followed close on the bear's heels. The cordon was slowly being drawn tighter, bruin was surrounded, escape cut off. But bruin was not yet taken, and didn't intend to be, if a stiff fight would accomplish anything. He was cornered, and a cornered bear will fight, and nobody but silly fools would blame him for fighting.

Presently, a rifle shot rang out on the crisp, mountain air, rapidly followed by several other shots. Both rifles were speaking; sending forth their challenge to the lord of the wilderness.

The bear was not long in answering the challenge.

With a great roar of anguish caused by the immense pain the bullet-wounds produced, the huge grizzly bear reared up on its haunches, snapping and biting frantically and viciously; then he charged directly at John, his teeth bared and giving forth ugly snarls as only a really mad bear knows how. Seeing John's imminent danger, his pal came to the rescue, putting in a good shot on his side, but still the bear proceeded to charge John, who was backing up degree by degree, fearing to turn and run, lest the bear would follow suit and catch him before he could reach a tree, for the bear, tho' clumsy in appearance, is really very agile and active, especially when riled up, as was this fellow. The next shot, however, caused the bear to turn on John's friend and charge him. This, of course, was my friend's queue to go to the assistance of his mate, which he did without delay, opening fire from his side. John's object was to break both shoulders of the bear, thus rendering him comparatively harmless. A ball aimed at the head is seldom effective, unless placed just behind the ear, and shots through the ribs or stomach serve only to make him intensely savage with pain, and a bear thus wounded, I know, is all every writer ever claimed and perhaps then some, often 10 or 12 hits being required to finish the job, unless a lucky ball be planted in a vital spot. It is important to maintain as much distance as possible between one and the bear while he is in his angry mood, and a good plan is to keep backing steadily, firing alternately with as much precision as you can possibly summon. Precision in aiming is a vital point, neglecting which you run great risk of eventually getting badly hurt or killed.

Suddenly the bear broke into a run and turned and came at John on a dead run, thinking apparently to put an end to one adversary at a time and do it quickly. John was stampeded with fear. He said afterward he lost his reasoning power by the suddenness and violence of the attack. He thought he was a goner. He broke and ran; seemingly there was nothing else to do, tho' he had always known this

was a very bad idea. The bear sure was camping on his trail, and the first law of nature (that of self-preservation) told him if he would preserve a whole hide and a healthy look he had better beat it for the tall and uncut, and that's exactly what he did. He admitted to me that he sure broke all speed records there that day, and opined the fact there was no stop-watch artist there to time him.

But just when he was beginning to think it was only a matter of seconds for him before the bear would have him in his powerful and death-dealing embrace, Fate came to his rescue. He suddenly became aware of the fact that he was no longer being pursued. Presently, summoning sufficient courage to glance back over his shoulder, he made sure of it. The great bear had fallen to rise no more. A little time and loss of blood proved his undoing.

It was dark when they got back to their hotel with the bear skin, and they were good and tired, tho' supremely happy.

SMALL GAME HUNTING:

(Note: Scientific descriptions of the various game aimals, birds, and waterfowl were written from data furnished by U. S. Dept. of Agriculture.)

Huntng methods differ in many localities, for instance, in nearly all of our Northern States and in Canada the fox is hunted with a pack of dogs, and the hunters are each armed with shotguns or rifles, the method being to shoot the fox at the first opportunity, while in the Southern States, notably in Kentucky, the foxhunters let the fox run ahead of the hounds as long as he is able to elude capture, and do not carry any firearms whatever. The Southern sportsmen hunt mounted on spirited horses, while the Northern folk go forth afoot.

The same rule applies to coon hunting, (except it is hunted afoot universally). In the South, the coonhunter fares forth at night with his lantern and perhaps also car-

ries an axe with which to chop down the tree wherein his ringtailed Majesty has taken refuge, but he does not need a gun, for the coon is never shot. The usual procedure is to get the coon out of the tree, or den, and let the dogs and the coon fight it out to the satisfaction of all concerned. On such occasions, not infrequently the coon gets the best of the dogs and makes good his escape. It is a method, the writer believes, worthy the traditions of sportsmanship, wherein the hunter gives the quarry a fighting chance.

As to quail shooting, duck and geese shooting, wild turkey hunting, and other land and waterfowl hunting, the methods all over our country appear to be much more similar.

In the following pages we shall describe hunting methods as applied to all sections of the country and which, therefore, may be of benefit to sportsmen in every part of North America.

These reflections and stories are the result of a lifetime spent close to Nature's Fount. If they prove an inspiration to brother sportsmen and to those not as yet fully initiated into the secrets of Nature's realm, they will abundantly have achieved the author's aim in writing them down. He can hope for no greater reward than that some suggestion offered herein may help a fellow craftsman.

To aid another is really the creed of every true sportsman, and if we have failed to aid you, either in lightening your burden or by offering timely and instructive suggestions, we have failed in our mission.

FOX HUNTING:

The fox hunter is held by many to be the most democratic of all outdoorsmen, for is not fox hunting the most democratic of all sports?

When fox hunters assemble for the royal chase, all caste and social distinction is thrown aside, and each man is judged by his fellows solely on his merits as a sportsman.

Thus, the "fox hunting fraternity," as they like best to be called, is in reality nothing less than the brotherhood of universal fellowship, brought about by the democratic sport—fox hunting.

The southern portion of the United States claims credit for introducing this grand sport into America. They claim

"CAREY," No. 27628 B. G. S. B. (BY TOBE-LADY), THE MOST SENSATIONAL WINNING FOX HOUND, WINNING EVERY TIME ENTERED IN THREE YEARS, 1916-17-18.

that for a long time it was strictly a southern sport, having been introduced into this country from England about the year 1650, when the English colonists brought foxhounds to Virginia and Maryland.

We have read somewhere that in England a pack of

foxhounds, consisting of from twenty-five to forty pairs, is maintained either by the neighborhood or else by rich individuals. In this country, as a usual thing, each hunter owns his own pack of hounds.

Before the Civil War, we are told, fox hunting in the South was much more popular than now, but this is not meant to convey the idea that the royal chase is not still much in vogue, for there are many more hunters now than then, due to the increase in population, as well as to the world war, which has learned men to live the simple outdoor life and returned them to America, from which they sailed to whip the Hun, full-fledged, unadulterated Sportsmen. When we speak of the popularity of the chase prior to the Civil War, therefore, we speak merely in terms of comparison.

Prior to the Civil War, the hounds in use were the old black and tan descendants of the ancient Talbot hounds, whose pedigreed record may be traced back into the ages for more than two thousand years. These hounds had the facility to trace a cold trail with perfect ease, and, possessing enormous muzzles, they bellowed forth a voluminous cry when in pursuit of their quarry. Again, they had very remarkable endurance and staying qualities, two requisites that must be present in the make-up of the ideal foxhound. These dogs, we are told, were accustomed to chases of great length after the fleet gray fox, a fox found commonly throughout the South. In Maryland the English foxhound was crossed with the Irish stag hound, producing hounds of greater speed and more excellent quality than those used up to that time. This cross was made because of the difficult conditions in that State, a dog being desired that would make a catch in quicker time and not require 6 or 8 hours as did the Talbot descendants. Thus the first step in the improvement of the American foxhound took place, and subsequent crosses and improvements has produced the greatest foxhound the world has ever known.

In the year 1738, the English colonists became dissatisfied with the common gray fox, and so they imported the red fox from the mother country—England, liberating it along the shores of Chesapeake Bay. The red fox has a habit of making great circles when being pursued, while the gray fox seeks to elude capture by dodges and doubles.

Many sportsmen have taken it upon themselves to improve the breed from time to time, hence we have various strains throughout the United States, but all are directly traceable to the hounds brought to this country by the early settlers.

To enumerate them, the July dogs, which were originated in Georgia, is a very popular strain;

The Birdsong hounds were introduced by George L. F. Birdsong, also a resident of Georgia, who was a noted fox hunter of his day;

Col. Hayden C. Trigg, and the Walkers, by judicious crossing and careful breeding, gave to the fox-hunting brotherhood the strains of fox hounds bearing their respective names.

To-day, each strain of the American foxhound has its ardent admirers, and it would be suicidal for me to attempt to state which strain is superior, even did I possess that knowledge, which I think no man does really possess, for all have their merits and are the result of generations of painstaking breeding, and none of them appear to have any faults worth mentioning, no more than any species of dog, as a whole, is faulty. Of course, we recognize the fact that there are good, bad, and indifferent individuals in nearly all breeds, with the possible exception of the Airedale, a breed which some say possess uniform quality and merit. We will not attempt to dispute that claim, for we have never seen a bad Airedale terrier.

The modern American foxhound undeniably possesses more skill, speed, endurance, staying qualities, and individual merit than any other strain of fox hound yet produced.

That is taking in quite a lot of territory, but it is quite the truth. To these pioneer breeders belongs the glory and thanks of every fox-hunting enthusiast for all time. Let us keep fragrant their undying memory, for they have done more for the uplift of the sport within a short span of years than all their forebears accomplished throughout history.

"THE PERFECT WALKER" FOX HOUNDS.
DOLLY AND SHERMAN.

Winners of the Georgia State Meet of 1918. Now the property of T. S. Cobb, bred and sold by Blue Grass Farm Kennels, Berry, Ky.

The Chase:

The chase was instituted in the old country, where even Royalty was wont to ride to the baying hounds in pursuit of the wily fox. It was essentially a sport in the mother country in which the well-to-do classes and the nobility participated. To be an ardent lover of the chase—a member of the fox-hunting fraternity—was to tell the world that you were

a man of honor and high standing among men. It was a sign of noble, or high breeding. Such was the opinion of the chase across the sea.

But in democratic, free America, when the chase was instituted by the early colonists, they saw to it that no race, no creed, and no caste should claim superiority over their common fellowman, for of all things the oppressed emigrants from England detested it was these things they hated most, and which they had braved the stormy deep to escape. So it was, that the fox hunting sport in America got a democratic start, and it has remained such on down to this time, we are indeed thankful to say.

Perhaps the uninitiated would like for me to describe a typical fox hunt. As nothing would give me more pleasure, being an ardent lover of this sport, I will do so. Those already members of the craft may also find some pleasure and some food for thought in the brief description of the chase given below:

As this is to be a southern chase, the assembled fox hunters, riding their favorite mounts, carry no weapons. Nothing more harmful than a riding whip is in evidence.

A sudden wind from the North the previous night brought a light fall of snow, for snow is quite common in winter in the Blue Grass region of Kentucky. Indeed, quite frequently during the winter months they have snows there as deep as three feet, but more frequently the snowfall is much lighter than that, probably a half-foot being the customary depth.

But this was the first snow of the season, early in December, and, as I have said before, it was a light snow. Still, it was a rather moist one, as most snows are this far South, and during the night had packed down well, so that when a bright day dawned Old Sol looked down upon a world covered by the dazzling white sheen precipitated from the clouds at the Master's bidding. It was indeed a scene of beauty! Nature had fairly outdone herself in thus setting

the scene for one of the greatest fox hunts that had taken place in the annals of local history.

The Master of Hounds quickly called the sportsmen about him to explain to them what was expected of each, for to play the fox hunting game as it should be played they must have rules and regulations to go by, the violation of which would be placed against the record of the hunter or his hounds, depending only upon whom was at fault. And thus when the scores of the different dogs were totaled up, demerits should be credited to those who, unluckily, had earned them, while the merits, of course, were placed to the credit of hounds or hunter acting within the prescribed fraternal law.

SHOOTING ROCKET No. 31006 B. C. S. B., BY FRANK-ANNIE WALKER.

And so, with fox hunting, it is much the same in technic as the rules laid down for other outdoor games; for instance, baseball, which has what they call "ground rules." Of course, it takes a radically different set of rules for fox hunting, but they are rules just the same. But here is the greatest difference. In baseball, there often arises con-

tentious argument with the umpires over the rules, and frequently we hear of an umpire being run off the field, the players of one side or the other having rebelled against his decision and refused to abide by it. Not so in the rules of fox hunting. Rules in this game are but a matter of form, for all obey the law—a law born and bred in the natural born fox hunter, a law embodying the essence of true sportsmanship, without which there could be no democracy for man, and without that there could be no government for, by, and of the people. Hence this spirit of sportsmanship permeates the very structure of our great Nation. Without it we could not be a free people. A King or a Kaiser would rule over us and we would be but mere slaves.

The Master of Hounds at length gave the signal that opened the chase. Each hunter unleashed his eager dogs, and, with glad cries, that rang out shrill and clear on the frosty morning air, the entire pack bounded off together in search of the spoor of the fox.

A thirty minutes hunt brought the desired results, "Bugle Boy," announcing in a bell-toned voice the fact that he had found the scent or spoor of the fox. Presently, the balance of the pack, one by one, took up the trail until they had all found it and were mouthing a happy chorus all together as they disappeared from the view of the hunters over the brow of the hill.

Swift horses are needed for this work, and swift horses did these hunters possess. So, with whip and spur gently applied, soon they again came in sight of the chase when they reached the hilltop.

The Master of Hounds reined in his charger, hastily took from his satchel that was strapped over one shoulder his field-glass, quickly adjusted it to his optics and scanned all the surrounding country from his point of vantage, trying to locate the whereabouts of Br'er Fox.

He watched the dogs as they noisily sped across the wide valley toward the distant hills, and he surmised that

the fox was very wisely leading them to higher, dryer ground. It was an old head; a fox with a head full of capricious pranks and cute tricks. Looked like it was going to be a hard run, and he thus confided his view to his fellows, who by this time had all drawn rein and were viewing the chase through their own glasses. Must be one of those old reds, they all concluded, and, replacing field glasses in their receptacles, spur and whip were simultaneously applied and with a "Giddap," shouted in unison, the eager party of hunters were again on their way, whither they knew or cared not, nor for how long they would require to bring Mr. Fox to bay or capture.

The frisky Kentucky saddle-horses seemed quite as eager for the chase as did either the hunters or the dogs. Some of them were "feeling their oats" it seemed, for they were buck-jumping and doing all sorts of fancy stunts, but when they came to a rail-fence, which is the usual kind of fence encountered in the Blue Grass State, they always hurdled same neatly and gracefully, without touching the top rail in every case, no matter how high, and when sternly rebuked by the rider they settled down like a bird-dog on point, only kept moving. And when I say moving, it is the intention to suggest speed, for these horses have speed to burn. Fact is, as not a few of my readers, I trust, already know, the Kentucky saddle horse is a marvel for speed, endurance, and staying qualities, just like the foxhounds many of you now own and take pride in exhibiting before your friends on any and all occasions that present themselves.

On and on went the dogs, giving tongue at every leap and bound. On the still, cold morning air rang out the long-drawn, deep, heavy voice of old "Sailor," that old battle-scarred hound that had proven his worth many a time in a fight to the finish with a big fox at the end of a day's chase. It was oft the anticipation of such a finish with old "Sailor" in at the windup of the chase that goaded and en-

couraged the riders on, and on, and still on—over weary miles, after Reynard had run clear out of the country, pitting his endurance against that of the dogs and the hunters. In such cases, the sportsmen knew that if they stayed on to the finish they would be amply rewarded by witnessing the mighty combat between the wily fox and Sailor. So this old champion of the chase was a favorite hero. But not all the honors belonged to him, for there was the strident, shrill, high-pitched voice of "Lady Gay," than which there was no dog with more fox sense or with four fleeter legs. It was her we distinctly made out, and others, too, could easily be recognized. Old "Tobe" could be heard mouthing in a squalling voice; "Barney" was giving vent to his feelings by quick, short howls; Old "Bally," was tongueing on track with a voice delightful to the ear of the fox-hunter, and altogether,—the high staccatos, and deep heavy bassos—the chorus was blended into perfect harmony, just as though a musical director was there and guiding them, so harmonious and beautiful did the melody sound that morning.

Presently, the dogs entered the hills to the east, and, galloping swiftly across the open valley, the huntsmen were soon entering the hills also.

The fox was, sure enough, leading them to higher ground. Once on the ridge, he began playing tricks on his pursuers by doubling back on his trail, then scampering off in a new direction. But those veteran dogs were not to be fooled. Of course, for a little while, a prank would bother them somewhat, but soon they'd pick up the scent spoor again and continue the pursuit. With our glasses, once we had gained the ridge, the direction the fox was heading was discovered, and all hands knew whither he was traveling—he was making for the den, the location of which every member of the party was aware of, so, in order to keep Reynard from attaining his object, the Master of Hounds commanded all to ride immediately to the den and there await the fox's approach, which would have the effect of keeping him going

on to a more distant refuge, as this was the only den in the vicinity, thus giving the eager dogs a chance, well deserved, to capture their wily quarry in the meantime before he could attain a second haven of safety.

We were assured by his actions now that he was about all in, as otherwise he would not wish to take to earth, but would keep on running, for the fox usually seems to enjoy a race equally as much as the hunters and hounds, if not too closely pressed.

"ASTRONOMER" No. 2831 B. G. S. B., By FRANK-ANNIE WALKER, IS THE SENSATIONAL WINNING FOX HOUND OF 1916-17-18.

In twenty minutes the baying of the dogs came faintly to us, and in a few short minutes Reynard was seen approaching the den where we stood guard to bar his entrance. His tongue was hanging out and he was casting fearful, furtive glances behind him. The dogs were indeed giving him a run for his money, as the saying goes. Presently, he discovered the party of hunters, and, with a look of hate on his face, he veered his course sharply to the left in order to avoid them, but this was a fatal step—Old "Sailor" caught him as he turned and together they rolled over and over on the ground, the momentum at which both were go-

ing causing them to bowl over; the fox regained his feet, paused for one breathless moment, then rushed headlong into the whole pack, facing death with a courage unexcelled by man or beast.

Thus ended the day's sport, each hunter lamenting that a fox so brave, so courageous, so fleet as this old red, had but one life to live for the enjoyment of the fox hunting fraternity.

We could doubtless record many and varied hunts, and probably another writer could record better ones, but the one given above, we think, embodies the typical southern fox hunt, than which there is no more entrancing and soul-lifting sport this side of Eternity and High Heaven.

In the North, they have fox hunts too, and they are in nearly all respects just like those had in the South, only in the North the hunters very frequently take along a gun and shoot the fox whenever the dogs bring him within range.

The Coon Hound:

The coon hound is not a recognized breed, but should be. Are all the years and generations of patient breeding by coon hound enthusiasts to amount to nought? We sorrowfully admit the truth—the coon hound breeder's efforts have, so far, been in vain. We mean in vain, so far as glory and honor are concerned; in vain, if these veteran coon hound breeders are looking for mere applause and nothing else. But happily, they are not looking for these empty honors; they did not start out to establish a breed of dogs, but to adapt already existing breeds to coon-chasing; this they have gloriously accomplished, and the only reward they expected or asked is that they be allowed to hunt coons with the dogs they have produced after years of toil by careful crossing and careful handling.

There is a widespread difference of opinion among dog men as to the origin of the coon hound, some maintaining even that the coon hound constitutes a distinct breed, while

others swear by the great horn spoon that the coon hound is nothing more than a fox hound trained on coons, and cite us to the fact that it was the fox hound (and not the coon hound) that was brought over to this country from across the seas to chase Br'er Fox, intimating that some of those brought over were found no account for that sly animal and just naturally were used for coon as a last resort. This is probably the truth, for it is a matter of record that the fox hound was introduced into this country, whereas there is no record of the coon hound ever having been introduced. Therefore, as the fox hound and the coon hound vary but little in general appearance (the fox hound only possessing more racey and graceful lines), it is natural to suppose that the coon hound as constituted to-day is nothing more or less than a fox hound, trained on coon. I cannot see any reason in this fact why coon hound fanciers should object, as the fox hound is as worthy a forbear as any dog on earth should wish to have.

It would be just as reasonable to say that the rabbit hound is a distinct breed of dogs, as it would to say that the coon hound is a distinct breed of dogs. In the opinion of the writer, neither would be stating the fact, for even as the rabbit hound comes from the fox hound stock, so does the coon hound come from the fox hound stock, and we defy all dog fanciers and others to show us our mistake. Of course, in a certain sense the coon hound is a distinct breed, for it will chase nothing but coon, even as the thoroughly trained rabbit dog will chase nothing but rabbit. Of course a coon hound may chase an opossum, but this little nocturnal fellow is so much like the coon, we judge the scent is almost identical. Some coon hounds will chase any kind of varmint; they usually call these varmint dogs. Others, more thoroughly trained, will run nothing but coon or opossum. On the other hand, a fox hound will sometimes run a rabbit, but a thoroughly trained fox hound is supposed to run nothing but a fox.

The dog, no matter what his breed or strain may chance to be, is nothing more than a creature of environment, as are all other creatures, whether they be animal or human beings. The nature of the country in which they live and the nature of the food they must necessarily live upon dictate their characteristics. If the hound lives in a country wherein rabbits are plentiful and there is an absence of practically all other game for food, the hound will take naturally to running rabbits; if the hound lives in a country infested by

THE PERFECT COON HOUND.

foxes, other game being practically absent, that hound will certainly chase foxes; if that hound lived in a land wherein only coon furnished a means of satisfying his hunger, we do not doubt that he would run coon. This is environment.

We believe that if a setter or pointer lived in a land uninhabitated by birds or fowl of any description, that dog would eventually take to stalking or chasing the particular kind of game to be found there, whether it be coon, fox, squirrel, rabbit or whatnot. The first law of nature—the

law of self-preservation—would dictate to that dog the idea that if he would sustain life he must satisfy his hunger by chasing or stalking whatever game he could find, no matter what kind of game it chanced to be. And so the dog is strictly a creature of environment, as is every other living creature. We do not doubt that if away back there in the ages of long ago the setter or pointer had lived in a country where there were no birds, he would have become whatever kind of dog the game in the region compelled him to be, and we think it is just a matter of accident that the hound will chase the fox, that the setter and pointer will just point a covey of birds, or that a pit bull will not hunt at all, but just fight. Why is it that the pit bull will not hunt? Simply because he has never had occasion to hunt game for food. Usually he is the pet—the house dog—or watch-dog, and his mission (and he fulfills it well) is not to leave the yard, but to bar the approach of all starngers and undesirables.

COON HUNTING:

Gang around, boys! For here is a sport worthy your attention. The scent of the coon is identical to that of his big brother—the bear—hence a good coon dog works well on bear, and a good bear dog, likewise, works efficiently on coon.

The coon is a masterful fisherman, hence he is usually found living in close proximity to streams.

For trailing his ring-tailed majesty, give me a mixed pack, part still-trailers (Airedale terriers preferred) and some good old-fashioned coon-hounds. The reason I suggest Airedales to run with hounds is because they are greater fighters, while the hound possesses the coldest nose, that is, the most ability to track a cold trail. Together, this sort of a pack is invincible and will put any old coon up a tree in short order.

In the North, most hunters hunt the coon by day and with a shotgun, with which the raccoon is shot from the tree the minute the dogs tree it.

In the South, the usual practice is to hunt by night, with a lantern and an axe, and, of course, a good pack of dogs. The lantern is used to "shine" the coon's eyes. That is, attract his attention, and when he turns his face toward the hunter his eyes may be seen, as they look like balls of fire after dark. Thus one is able to find out if the coon is in the tree, already indicated by the dogs barking at bay. The axe of course, is used to hew the tree down, if other means fail to induce the coon to come down and introduce himself to the waiting dogs.

Sometimes a venturesome hunter deigns to climb the tree wherein his majesty sits. Sometimes the hunter successfully performs the job, and sometimes the coon resents the intrusion into his leafy domain, and a battle between man and mammal follows, in which the man usually receives enough scratches, cuts and gashes from the claws and teeth of his adversary to make him ever after respect the raccoon. If, perchance, the man succeeds in ejecting the ring-tailed "monster" to the ground, the waiting dogs will find to their sorrow that they have something in the nature of a fight-to-the-finish on their hands not altogether to be desired. Usually, however, the dogs are present in such overwhelming numbers as to make the battle unequal and unfair. If the coon had only one dog to whip, we will not venture to predict the outcome, but we have a sneaking notion that such a dog would remember ever afterward that encounter, providing the coon was a full-grown one and in good fighting trim.

RABBIT HUNTING.

The little bunch of animated fur, as some call the cottontail, or "Sylvilagus floridanus," is one of our most widely distributed and most important small game mammals. Perhaps every American is familiar with this form of rabbit, because they are so numerous within our borders. If not familiar with this form, then you are acquainted with some of the cottontail's relatives, since in one species or

another they range from the Atlantic to the Pacific coast and from the southern border of Canada south through our country on down through Central and South America to Argentina. They are not at all particular about the kind of country they inhabit, being found in all sorts of localities and in the different climes.

The junior hunter, especially, delights to go out and enjoy a rabbit chase with his favorite dog, be it hound, nondescript, or Airedale terrier. Or, having no dog, he loves to track the cottontail in the snow, which, while having the disadvantage of being somewhat tedious, is a very exhilarating form of outdoor exercise and sport. I don't think, however, that the average junior is half so anxious for the exercise as he is for the sport.

The ideal hunting dog for this game is a foxhound trained on rabbits, thus you get the speed necessary to bring the rabbit around to you (they nearly always run in a circle when pursued by hounds) and within gunrange, and not only do you get speed, but you get a dog with a head full of sense, up to all the tricks, hereditarily, that the average foxhound possesses.

The Airedale terrier may be trained specially for this work with more or less success, but for me, give me the foxhound trained on this game, for best results. The beagle hound is also a good rabbit dog.

In habits, the rabbit family is mainly nocturnal, sleeping by day and doing most of their traveling by night. This characteristic makes it essential to have a good dog to hunt them out of their retreats in thickets, tall grasses, and brush in which they make "forms" wherein they sleep.

"Br'er Rabbit," is one of our game animals that constitutes almost an institution (in a sense), because of the interest and place they have in our folklore and literature.

Wherever shelter is absent in the form of a thin growth of vegetation or wherever brushy bushes are lacking, the cottontail usually occupy burrows in the ground. Sometimes

they utilize deserted badger or prairie-dog dens, but frequently they dig them for themselves under rocks and other objects. Ofttimes they also make their home in the crevices of rock walls and rock fences. In fact upon occasion they will make their nests most anywhere a likely spot may be found. They have to do this to maintain preservation of life, which is the first law of all nature. Increased cultivation of farm lands is the most serious stumbling-block to their rapid increase, and, as it is, they seem to be holding their own in most every community, and in quite a few localities they have even become so numerous as to be termed a nuisance by a certain class of folks, who, while well-meaning, are not exactly nature-lovers.

Granting that it is true they do some damage to growing gardens, this fact does not justify their extermination, since their meat forms one of the important meat supplies whereby the human family subsist. The annual kill of rabbits mounts up in value into thousands of dollars, perhaps even into the millions, while the damage they do, comparatively speaking, amounts to hardly anything. We are for the rabbits, first, last and all the time.

The cottontail forms a target worthy the quick eye of the trained gunner, as it bobs up and down, leap by leap, and swift as a fleeting shadow. One must be ready to pull trigger the instant Br'er Rabbit is jumped by the dogs, or without dogs, as some hunters hunt them. If you are afraid of shooting the dog when the rabbit is first jumped, or if the rabbit gets up too far ahead and not within gun-shot, you will be free to take your time and await the time when the rabbit circles, as he assuredly will.

As a game animal the cottontail furnishes some of the most enjoyable and interesting sport to be had by American hunters. The zigzag, headlong rush of a cottontail for the nearest cover is replete with so much energetic action that it excites a pleasant thrill in the onlooker, and even the "pot-hunter" must experience some qualms of the heart in killing them.

They are also snared and trapped, but the true sportsman abhors the often prolonged suffering of the animal kingdom necessitated by their use, desiring to use the most humane manner of dispatching them possible, that of firearms.

OTHER SPECIES OF RABBITS AND HARES:

Antelope Jack Rabbit (Lepus alleni):

This jack rabbit, sometimes called the Allen jack rabbit, is larger than the common western jack rabbit, and has very large ears, long, slender legs, and short tail. They are found in limited areas on the southern border of the United States, particularly in southwestern New Mexico, and in southwestern Arizona. The rabbits of each area, however, differ somewhat.

California Jack Rabbit (Lepus californicus):

This species is one of the best known species among the jack rabbits of the Western States. It has long ears, tipped with black, a long, thin neck, long legs, and has grayish sides.

The Varying Hares (Lepus americanus):

These hares are better known, perhaps, as snowshoe or white rabbits. They become white in winter and change to dusky or brownish in summer. Nature indeed sees that they are clothed in harmony with their surroundings, thus making them invisible, well-nigh, both in the snowy winter season and in the early summer and autumn.

The Arctic Hare (Lepus arcticus):

This species is about the size of the large jack rabbits, but have heavier bodies, with much shorter ears, and short, sturdy legs. In the southern part of their range they have a dull iron gray color in summer, but in the northernmost part of their range their coat remains white throughout the year.

The Marsh Rabbit (Sylvilagus palustris):

This species is a close relation to the cottontail, but is more heavily proportioned, has smaller ears, shorter and more slender legs and feet, and shorter tail. The marsh rabbit and swamp rabbits have aquatic habits, and both live mainly in swamps, marshes, and along streams.

The swamp rabbit is a larger relative of the marsh rabbit and they are very numerous in certain wooded coastal regions of the South.

SQUIRREL SHOOTING:

Sportsmen have found this is an art that requires lots of vigilance, stealthy movement (where movement is required), and a super-abundance of patience.

To become a crack squirrel hunter, one must haunt the wooded places a great deal, become fully acquainted with and accustomed to the ways of the forest people; he must learn to walk easily on the dry leaves; learn to stalk your game, even as the great carnivores stalk their prey; in short you must become a thoroughly trained woodsman.

Woodcraft is a most entertaining and interesting subject—an entire book could not hope to cover the theme adequately—and it is a craft that the successful hunter acquires early in his career. Without the knowledge of woodcraft the huntsman confronts failure. We can think of no better way of acquiring this art than by friction—contact with nature. Go into the great forest, study, observe. Our forebears were masters at the art. Why? Because a livlihood depended upon their efforts to secure game for food. But now, necessity no longer urges us to become acquainted with nature's storehouse, and it makes us none the better woodsmen. We are too prone nowadays, it seems, to take other people's advice—follow other men's directions—in-

stead of delving into the matter for ourselves to our best interests.

Squirrel hunting was engaged in by our forefathers, and many of us still possess the old squirrel rifle that was the crowning climax in firearms in those early days. Even as I write I see standing in the corner nearby the rifle my folks used, and tho' it has no notches carved on it for "dead Indians," I'm quite sure if it could talk it could relate some interesting and thrilling tales.

Some hunters use a twenty-two rifle for this work, but the majority prefer the shotgun.

It takes a quick eye and a quick trigger finger to get one of these "streaks of greased lightning," as some call them. They are great jumpers, and if the hunter is not careful, they will leap to the ground, or from tree to tree and make good their escape.

Still others hunt squirrels with a dog and gun. Local conditions vary in different sections of the country in this, as in all other sports, therefore we must use our own judgment in these matters and adjust ourselves to these conditions as we find them.

Not a few sportsmen prefer to hunt without dogs, as this method gives them an opportunity to stalk the game themselves, which they enjoy doing, while others would rather use dogs for the mere joy of seeing them perform, and no doubt there is still another class who think better results may be obtained by using one or more dogs.

Whether the hunter walks great distances through the big woods, or sits nearby a big, towering tree, waiting the appearance of Mr. Squirrel, who he has good reason to suspect inhabits said tree, the sport is one that should commend itself to a larger percentage of our sportsmen, inasmuch as it offers splendid returns both in physical exercise and enjoyment, as well as a deeper knowledge in that all-absorbing subject—woodcraft.

The Red Squirrel (Sciurus hudsonicus):

This little gent is best known to those who have visited the great woodland country of Canada and northeastern United States, and who have listened to their rollicking, (often impudent), chatter. This fellow is also known as the pine squirrel and chickaree, its chief characteristic being its lack of shyness, which is present in all other species of the squirrel family.

It builds nests of twigs, leaves, etc., lined inside with fibrous bark and other velvety material.

Red squirrels do not hibernate, but are busy the entire year, excepting in the coldest weather. They provide for the cold dreary days, however, by laying in ample stores of nuts and cones, having been known to put away as many as ten bushels in one heap. Beechnuts also form one of their articles of diet.

The worst trait the red squirrel possesses is his thoroughly proven habit of devouring the eggs and young of small birds. During the breeding season he spends much time in nest hunting and no one can calculate the harm he does.

The Douglas Squirrel (Sciurus douglasi):

This squirrel is said to come from the same stock as the common red squirrel, which we have already described. Like the red squirrel, it likes best to reside amid the grat coniferous forests, and it is found from the Cascades and Sierra Nevada to the Pacific, and from British Columbia south to the San Pedro Martir Mountains of Lower California.

In nearly all ways they are like the red squirrel.

The Gray Squirrel (Sciurus carolinensis):

This fellow is so well known to nearly all sportsmen as to hardly need an introduction or description, nevertheless, we don't want to slight him, as he is well worthy our atten-

tion, being one of the best game mammals that roams the forest.'

This is a North American species, having no near relation in the Old World; on the Pacific Coast, in the mountains of the Southwest, and also in Mexico there are other squirrels with the same gray-colored bodies, but really are not closely related to this species.

Their barking and chattering noise and their graceful antics among the trees lend animation and color to our woodlands.

Most if not all States have a closed season on squirrel, their numbers having been so reduced as to make them no longer a menace.

Gray and Fox squirrels (the latter of the species Sciurus niger) were favorite targets for our forefathers, and these mammals have much in common with our folklore and literature. Records show the shooting ability of these pioneer marksmen, among them Daniel Boone, to "bark" a squirrel, which meant so to cut the bark of the branch on which the squirrel sat as to precipitate it to the ground stunned without hitting the animal.

The gray squirrel is noted for its grace of movement, being able to move along the ground by curving leaps and bounds, and run through the tree-tops, leaping from branch to branch with an ease and assuredness beautiful to behold.

Rusty Fox Squirrel (Sciurus niger rufiventer):

Three species of tree squirrels are found in the varied forests of eastern North America.

In hunting fox squirrels it is imperative to have along a dog, as otherwise they will discover your presence and run away before you can get within range, while a good dog will put them up a tree and hold them there until you approach.

The right thing to do would be to abolish squirrel hunting for a term of years and give them time to replenish their numbers.

Other species are the Abert Squirrel (Sciurus aberti); the Kaibab Squirrel(Sciurus kaibabensis), Flying Squirrel, (Glaucomys volans), etc.

QUAIL SHOOTING:

Perhaps quail shooting constitutes our most popular form of sport, for the quail certainly is one of our best game birds, and its wide range makes it a favorite with a large part of our population.

On account of their interesting habits and marvelous diversity of form and color, the quails of the United States are a very attractive group of game birds. They are all very handsome, but the most striking and beautiful species live on the Pacific Coast and in the Southwest.

Within Columbia's gates we find seven species, only one of which is found in the eastern States, the remaining species being widely scattered from Texas to California and Oregon. Their range was, and is yet, continuous along the entire southern border of the country from ocean to ocean; but there is an irregular belt along the northern border and a large area in the interior, comprising the Great Plains, the northern three-fourths of the Great Basin, and the Rocky Mountains, in which they appear to have been originally wanting.

The quail's cheerful habits, their beauty, and their value as food, has made them welcome, generally, on the farms throughout the country, but their real value to agriculture is not even yet fully appreciated. The Bob White species, especially, deserves some recognition for the great work they do annually in the interest of the farmer, as they destroy injurious insects and feed on injurious weeds to a great extent.

This latter species—the Bob White—is the greatest game bird of all seven varieties. This is the only quail indigenous to the eastern United States, where it ranges from

southern New England to Florida and Texas; but owing to climatic influences the birds of Florida and Texas differ enough to be distinguished as geographic races. However, the Bob White, wherever it occurs has the same call and varies but little as to habits. A closely related bird, the masked Bob White, inhabited southern Arizona until a few years ago. Owing to dry seasons and the overstocking of its home with cattle, this bird is now supposed to be extinct within our confines; but some probably exist in parts of Sonora, Mexico.

The Bob White, although a very handsome bird indeed, is the plainest looker of the quail family, excepting the "cotton top" or scaled quail of the deserts of southern Texas and Arizona, the latter being a slaty bluish color on its upper parts, which are ornamented with large scale-like markings and has a whitish crest.

The most bizarre and curious of all is the Mearns quail of the high broken plains and mountain slopes of southwestern Texas, southern New Mexico and Arizona. It has a short, round body, like a little guinea hen, and this superficial likeness is heightened by brilliant round white spots ornamenting the dark sides. This bird is the gentlest of all the quails and is said to be so unsuspicious that when it encounters one it often walks unconcernedly about or stands looking curiously at the newcomer, at which times it is not infrequently killed with a stick or stone, a characteristic which, among the people where it is found, has earned for it the name of "Fool Quail."

Out in the southwestern desert is also found the Gambel Quail, ranging throughout the brushy foothills and the valleys along watercourses. This is a beautiful member of the quail family, its head being handsomely marked and adorned with a jet black recurving crest, the flanks being bright chestnut in color, brilliantly streaked with white. This quail forms one of the most pleasant and conspicuous varieties of desert life and is numerous wherever it can find suffi-

cient food and water. Its presence contributes a touch of color and animation to the dreary monotony of many a lonely desert ranch.

The California valley quail belongs entirely to the Pacific Coast, and this is said to be the most beautiful of the smaller gallinacous birds of the entire world. In appearance it resembles the Gambel quail slightly, especially in its recurving black crest, and general appearance, but exceeds that bird in the richness of its colors and markings.

Then there's the California mountain quail, which is the largest and one of the handsomest of this group, inhabiting the wooded mountains of the Pacific Coast. In appearance it bears a superficial resemblance to the red-legged partridge of Europe, and like the Mearns quail, its haunts are usually more remote from cultivated lands than are those of the other species.

The health and pleasure derived from the pursuit of quail has resulted in the investment of millions of dollars, both in hunting equipment and in the establishment of quail preserves in different parts of the country.

And so, it is with real pleasure that we write of the quail family and quail shooting, for no other class of hunting outranks this sport.

When a covey of quail is flushed, they rise from the earth with an explosion so sudden and startling as to shock one unaccustomed to hunting them and even the old-timers experience some of the sudden thrill.

Let us go afield! The crisp November air and the morning sun combines in exhilarating effect upon the soul of the outer. The dogs are straining eagerly at leash for the sport ahead. They know quite well what is in store for them—a day's hunt —and thus they impatiently tug and pull at their leads to get there.

At length, we reach the hunting grounds, which for miles in every direction consists of stubble-field and uncut clover, favorite Bob White haunts.

We adjust our guns, the dogs are loosed, and everything is made ready to begin the hunt.

The four dogs are experts—two of them being pointers and two setters. They have hunted these fields before—last season—hence we term them old veterans, which they are indeed, not only because of much service, but because of their tried and proven ability as bird dogs. We can depend upon their efforts to produce results, if there are any birds in the stubble-fields or clover-fields hereabout at all.

They are slow and cautious workers, which are to be preferred by most hunters to the swift and harum-scarum sort that are liable to burst right into a covey of quail headlong and flush them all before the sportsmen can get within shooting distance. It is a strange commentary, however, that not a few hunters like just such dogs. Generally nervous men are these, who have not the patience to hunt slowly behind slow and painstaking dogs.

Presently, the dogs make a stand. Blake's Sportzell, a setter of noble breeding, is on point—as steady and true as Gibralter's Rock—Topsy, a pointer of high standing, is backing. It is a picture fit for a king to gaze upon. We sigh for our kodak, unfortunately left behind. It is ever thus—just at the precise moment when the dogs are pulling off a stand that would look well in a frame hung on the wall of one's den, the camera was left at home. Cruel fate!

My partner slowly approaches the dogs, commanding, "Steady!" This command was only a matter of form; no command of any kind was needed, for these dogs were thoroughly trained and knew their business quite as well as anybody.

At the opportune moment, after we had taken up advantageous positions for shooting, the birds were flushed, and, exploding like a trench mortar, or a Russian bomb, they left the earth for parts unknown.

Bang! bang! bang! spoke our repeating shotguns, and six of the flock fell to rise no more.

Sportzell and Beauty broke into a race to get the birds, which they retrieved tenderly and eagerly. Thus we brought down our first birds of the season.

The remaining portion of the covey had been seen to scatter, and we knew it would be of no avail to try to follow them. Birds of a scattered bevy are hard to find. Good authorities say that when they alight after they have been frightened, they remain quiet and compress their feathers to the body, which results in withholding the scent, and so it is wise before attempting to hunt them to give the covey time to reassemble and get over their fright, so they won't lay so close to earth and withhold scent.

Volumes have been written about birds, but the Bob White member of the bird family cannot receive too much attention. He is a worthy subject. I would that I were able to adequately portray the kindly feelings I have in writing to the credit and glory of the Bob White, the king of his race, and who is, in the opinion of many, the best bird that flies. He has brought more rest and recreation to the tired business man, more new life and vim to impatient and nervous humanity, than any other single agency of nature, and that is saying a great deal indeed, for Nature abounds in game worthy our attention and appreciation, to say the least.

CALL NOTES OF THE QUAIL:

The nuptial call note in the field of the cockbird is an infallible guide to its identity, but this familiar challenge, which sounds to the sportsman like "Bob White," "Bob-Bob-White," and to the farmer like "more wet," or "no more wet," is by no means the only note of the species during the breeding season.

The observer will probably hear the cock whistling "Bob White!" and as he still calls, approaches the nest. When within perhaps fifty yards of his mate he utters the rally note, so thrilling to the sportsman's ear, "ka-loi-kee,"

which the hen often answers with a single clear whistle. Then perhaps follows a series of queer responsive caterwaulings, more unbirdlike than those of the yellow-breasted chat, suggesting the call of a cat to its kittens, or the scolding of a caged gray squirrel, or, again, the alarm notes of a mother grouse blended with the strident call like that of a guinea hen. Sometimes, as a finale, comes loud rasping noises, not unlike the effort of a poor broken-voiced whip-poorwill. Their favorite calling stations seem to be rail fences at a height of from five to ten feet, and the limbs of trees along fence rows. They have been known to whistle from trees, thirty-five feet from the ground. After the breeding season the quail quits using this characteristic call. At other times the hen will answer thusly: "Whoil-kee," but this note is usually only used when a bevy has been scattered, and is sounded, generally, in the late afternoon as a get-together-for-the-night signal.

We cannot refrain, before closing this chapter describing the quail family and quail shooting, to implore better care of our fast-declining quail supply, and particularly the Bob White supply. In many places they are suffering ruthless extermination by law-breakers, and also by reason of severe winter weather.

The least the sportsmen of America should do is to hale these "poachers" before a Court, and as to the weather, why not put out a little grain for the starving birds to eat after heavy sleets and snows? It would be not only humane, but for the good of the sport.

OTHER GAME BIRDS:

Woodcock Shooting:

This form of sport has hitherto been a favorite with a great many gunners, for be it known among all men that "Philohela minor" is a game target that, in their fast and erratic flight, requires a quick eye and a clear head.

They breed throughout the eastern part of the United States, as well as in the neighboring Canadian Provinces, and spend the winter principally in the southeast of this country. This upland game bird is nocturnal in habit, feeding at night in swamps, along small streams, and ponds, where the long bill they possess comes in handy in their search for food.

Of late years, their numbers have rapidly decreased, necessitating strict conservation laws. It would indeed be a pity to see them utterly exterminated, as they are a game bird held in high esteem by all sportsmen.

Wilson Snipe:

The Wilson Snipe is found over nearly the whole of North America, and, being a dweller of thickets and marshes, its pursuit readily appeals to the true sportsman, and so sudden, rapid, and irregular is its flight that it requires the highest skill of the marksman to bring one down.

Upland Plover:

This is another of our fine game birds. Its scientific designation is "Bartramia longicauda." Like the woodcock, the plover is another of our best game birds that within recent years have had their numbers dangerously depleted, largely due to spring shooting. The protective measures and closed seasons came too late, it is feared, to save them from total extinction.

King Rail (Rallus elegans):

These birds inhabit fresh-water marshes, generally speaking, throughout the eastern part of North America. In habits, they are very timid, keeping well under cover in the tall grasses of the marsh, doing most of their feeding by night.

It is exceedingly difficult to flush them without the aid of a dog, which, therefore, is an asset in their pursuit the hunter cannot afford to be without.

Once flushed, the rail family are dead easy targets, being very slow of wing, and able to fly only a short distance. The worst shot in the world should have no trouble in getting his share of them.

There are several kinds of lesser rails, including Clapper Rails, California Clapper Rails, Carolina Rails, Virginia Rails, Yellow Rails and Black Rails.

Ruffed Grouse: (Bonasa umbellus umbellus).

This splendid game bird is classed by a great many sportsmen as America's most popular game target that flies. The family embraces several strains, but the ruffed grouse is the recognized leader of them all. They are found in wooded country, usually, and it requires a quick eye and a steady nerve to bring them down, as they rise with a thunderous roar and rush that often "gets the goat" of the novice. These birds are found throughout the northern half of the United States and in the southern half of Canada, in wooded cover.

Who has not heard Mr. Grouse drumming on a log in springtime, which is a sure sign the warm days of spring are with us once again? This remarkable bird is beloved of all sportsmen, and we regret to see their numbers decimated as they have doubtless been in recent years. It is a game bird that adds a touch of spirited life to many a lonely glade and glen.

In hunting grouse a good dog—Setter or Pointer—is indispensable. A careful, slow-working, steady dog, staunch on point, is required.

Prairie Chicken, "Tympanuchus americanus":

Prairie chickens lie well to the dog, and are usually found in open, easily traveled country. It is useless to try

to hunt them without having along one or more good, thoroughly trained dogs, either Setter or Pointer. While there is a deal of sport in their pursuit and capture, they are not as difficult to wing as the ruffled grouse.

Sage Hen, (Centrocerus urophasianus):

This is the largest member of the American grouse, weighing as high as eight pounds, and is found in the western portion of North America. They inhabit the Great Basin and arid planes of the region wherein found. Their name itself suggests the nature of their cover—the sage brush. They not only use this sage as cover, but feed upon its leaves, which lends to their flesh a disagreeable taste. Owing to the fact that they are easy marks, on account of their large size, for the gunner, they are becoming scarcer and scarcer, and are retreating to places not yet habited by man, whom they try to shun.

Wild Turkey (Meleagris gallopavo silvestris):

The wild turkey is not only the largest American game bird, but it is a bird that claims attention from a great army of sportsmen. In by-gone days wild turkey hunting was one of the chief pursuits afield engaged in by a large number of hunters, but now, owing to its size, which made it a comparatively easy mark for the gunner, its numbers have been greatly decimated.

The method usually employed in their capture consists in trailing or calling them. They have keen optics, and are fleet both on land and in the air.

If not molested by man for a few years, and if their natural cover was not usurped by agriculture entirely, they would probably again become a common and profitable game bird.

The turkey has many champions who assert that it should replace the eagle as our national bird. Truly it has all the virtues and none of the vices that the terrible eagle

does possess, and there is, therefore, not a little sound common sense in this argument.

At Thanksgiving dinner the repast would hardly be complete without the big roasted turkey occupying the center of the table, and drawing to its delicious carcass the concentrated attention of all eyes. While the domesticated cousin of the wild turkey is delicious, it has not the gamey taste that distinguishes all wild fowl.

DUCK AND GOOSE SHOOTING:

This sport is a favorite with a large and ever-increasing number of American hunters. In the art of duck and goose shooting patience is as much a virtue as it is to the angler, for it takes great patience indeed to lie and wait for returning ducks or geese in a blind on a cold, raw day. But there is pleasure to be had in this sport more than offsetting any minor inconveniences, say duck and goose enthusiasts.

The lakes, rivers, streams, ponds and marshes of America offer water-fowl a veritable paradise for a home, and they seemingly realize the excellent quality of the food and the cover our wild celery and wild rice marshes afford them, for they continue annually to visit our shores in great numbers.

Wild waterfowl are distributed practically all over the entire world, and from time immemorial ducks and geese have been held in high esteem by mankind, everywhere being eagerly sought after for sport and for food.

Their food value needs no mention. They are noted for the fine flavor and richness of their flesh—most species—and are an article of diet to grace a king's table. Neither does their beauty need emphasis, other than the opportunity to look admiringly upon them as they soar majestically in great flocks toward or from their breeding grounds, or to and from their feeding places. They lend a charm of life and animation to the otherwise desolate ponds and lakes,

and they doubtless are of great value to agriculture, as most seed-eating birds are. But great though all the other reasons for desiring their presence may be, there is the crowning reason in the fact that tired and worn-out humanity can, by the exhilarating sport they afford, alleviate, or at least offset some of the nervous strain to which the average business man of this age is subject.

The flesh of wild fowl constituted an important item of diet in the larder of the aborigines of this country, who, by means of the bow and arrow we have already described, and also by the use of numerous other devices, nets and traps, succeeded in obtaining them in considerable numbers, especially when they were young and unable to elude capture by flight. The Eskimo and northern Indians, in fact, would fare badly but for the great numbers of waterfowl that visit their country annually to breed, and their eggs are also sought by the natives with avidity. The first settlers also found waterfowl a necessary addition to their larders, and, insofar as game was concerned, the fowling piece early became a more important part of the settler's equipment than his rifle.

However, neither the natives or the settlers appreciably reduced the numbers of ducks and geese that at given periods covered the lakes, ponds, rivers and marshes of this favored land. The fact is, it was not until the perfection of that potent engine of destruction, the breech-loading shotgun, that waterfowl began to decrease at an alarming rate. This was due, not alone to the breech-loader, but to the ever increasing population with a consequent increase both in number of sportsmen and market gunners.

So rapidly are some species decreasing in certain States that the supply is already threatened, and stringent laws have been found necessary. The migratory bird law, a widely discussed and often criticised measure, has already proven its worth, and within a few years, with the abolishment of spring shooting, the supply of ducks and geese will

again be replenished. It seems that the wood duck, one of the handsomest of our native birds, and one whose breeding range lies almost entirely within our own borders, is the species that has suffered most. In some sections, in fact, in not a few sections, it has been entirely exterminated. It is a question whether the wood duck will ever again be plentiful.

Other species, however, since the enactment of the spring shooting law, are showing an increase, and in due time, let us hope, once more the sun may be darkened by the flights of ducks and geese as they joyfully wing their way through space, as in days of yore.

The successful duck and goose hunter must possess the instinct of stealth. Silent movement, where movement is required, is an art much needed to acquire skill both in hunting and in fishing. Not only silence, however, is required in the matter of hunting waterfowl, but one must have the proper talent to camouflage one's movements and conceal one's presence from the duck or the goose that is ever watchful for his mortal enemy—man. They have the eye of an eagle and will surely spot you, if you are not dressed in harmony with your surroundings. If your surroundings are brown, such as dead horseweeds, or dead vegetation of any sort, then assuredly you should have on a brown or tan outfit. Pay strict attention to every detail, such as your necktie, if you wear one on your hunting trips, or your hat. Don't make the mistake of wearing a gaudy neck-piece or a loud cap or hat. The waterfowl will certainly spy you out, and won't land near where you are. How often have you been waiting for ducks or geese, and when a flock would appear they'd circle over you, and then, after the leader gave a warning "Honk, Honk, Honk!" they would again spread wide their wings and soar away to parts unknown, much to your discomfiture and angry regret? The reason was, of course, that you were discovered, due, probably, to some showy garment on your person.

There are 64 species and sub-species of ducks, geese, and swans which are found in North America north of Mexico, 24 breeds of this number occurring in the United States. The species commonly recognized as most important to us are the wood duck, mallard, black duck, teal, canvasback, redhead, and Canada goose. Several of these breed only in our Northern States; but the cinnamon teal and ruddy duck nest as far south as southern California, and the wood duck breeds nearly anywhere in the United States in which it receives any measure of protection, and the great bulk of this species winters within our boundaries.

As we write, recollections of bygone days come flitting back to us, of happy excursions to the marshes and ponds after the elusive mallard, and many and pleasant memories dance before our vision, of how we hid in a fodder-shock, or among the tall dead grasses and weeds that had grown rank in the fertile marshes.

Ducking is practiced by different methods in various parts of the country. The commonest method being "point shooting" and this is the way they do it in the great Middle West, a region in which mallards, pintails, teal and widgeon are plentiful along the numerous watercourses, and on the lakes, ponds and marshes. In some of the southern States a floating blind is used, consisting usually of an open box, fitted with brush camouflage so as to screen the gunner from view. While "out west" they like to "pass hunt," that is, the gunner takes up a position between two marshes, and tries his luck as the fowls fly from one feeding place to another, and along the coast where the red heads, broad bills and a few canvasbacks are found, the hunter prefers what is known as "the battery" in places where this device is permitted by law. This consists of what is called commonly a "coffin box" that has a platform extending around it to ward off the waves. When weighted properly it is submerged just so as to keep it a trifle above water and insure it against capsizing and makes it practically invisible a few

yards away; the gunner is compelled, however, to lay flat, which is necessary to effectively hide his presence from the ducks. Decoys are usually anchored nearby, which attracts real ducks to the vicinity and within gunshot.

But to get back to "point shooting," as practiced in the Middle West, the hunter generally puts out 25 or 30 decoys near a spot where ducks are in the habit of passing, draws his canoe or boat into the reeds and awaits the approach of the next flock.

One of the most essential items in duck hunting is in the matter of warm wearing apparel; something not only warm but waterproof is desirable.

In the matter of guns for this purpose, give me a 12 gauge choke bored double-barrel gun, which is the generally accepted gun for duck hunting.

As to shells, these should be loaded with 3¼ drams of powder and 1¼ ounces of No. 4 shot.

Some hunters prefer the old ten gauge, because it makes a better pattern with large shot, up to about size BB, but it has nothing on the 12 gauge for range and in addition is heavy to carry and handle properly.

In picking up a duck or goose from the water, pick it up by the head, as this will cause the water to run right off; if you pick it up by the feet, that method fluffs the feathers and the waterfowl becomes water-soaked and heavy to carry.

The ducks and geese are a very interesting family, and a whole book could well be written on that subject. I wish we had space to deal more at length herein on duck and goose shooting, but it is impracticable and also unnecessary, for those who have hunted waterfowl full well know how and where and when to hunt, and those who haven't yet indulged in this thrilling sport must do so before they possibly appreciate an article on this subject.

One of the most interesting members of the goose family is the Canada goose, scientifically known as Branta canadensis. Its summer home, principally, is the interior of

Canada, from Saskatchewan and Alberta north to the limit of trees. Eastward it breeds in the interior of Ungava and casually as far north as Okak and Ungava Bay. It also breeds quite commonly in Newfoundland, and is fairly common on the islands of the Gulf of St. Lawrence and then west through Quebec and northern Ontario to the south end of James Bay.

In the interior, the breeding range extends somewhat farther south.

The principal winter home is the southern half of the Mississippi Valley west of the Mississippi River, but it is not rare in the eastern United States from Florida to Maryland, occasionally to Massachusetts, and is recorded during the winter in Maine, Quebec, Nova Scotia, and even in Newfoundland. Its normal winter range in the interior extends as far as southern Indiana and southern Illinois, but a few specimens have also been noted in Ohio, southern Ontario, southern Michigan, southern Wisconsin, Nebraska, southern Colorado, and southern Utah, according to government investigators. The winter home also includes all of the Pacific coast region as far north as British Columbia.

WINTER RANGE OF DUCKS:

American Merganser:

"Merganser americanus," as this duck is called by scientists, ranges on the Atlantic coast from Maine to South Carolina, rarely to Georgia and Florida, and in mild winters it occurs as far north as Prince Edward Island, while in the interior it winters from the Gulf of Mexico to southern Ontario, Lake Michigan, Kansas, northern Colorado, Idaho, British Columbia, and rarely to Unalaska Island and the Pribilof Islands. In winter it reaches northern Mexico and northern Lower California, and also occurs occasionally in the Bermudas.

Red-breasted Merganser:

This duck, "Merganser serrator," has been known to reach to the vicinity of Havana, Cuba, but rarely does it go south of the eastern United States. It is not a rare visitor in winter to Florida and along the gulf coast to Texas, but it is quite rare in New Mexico and Arizona, and is common throughout the whole of California and south to Lower California. In winter it is common on the Atlantic coast as far as Maine, and remains around the Gulf of St. Lawrence until the bays freeze up. It is said also not to be uncommon even in Greenland during the winter. In the interior it braves the winter weather on the Great Lakes and north to Wisconsin, Nebraska, Colorado, and Utah; north on the Pacific coast to southern British Columbia, and is also a casual visitor to the Hawaiian Islands and the Bermudas.

Hooded Merganser:

"Lophodytes cucullatus" is the Hooded Merganser's official title. This duck remains during the winter as far north as Massachusetts, Pennsylvania, Lake Michigan, Nebraska, Colorado, Utah, and southern British Columbia. In the central districts and Gulf States it is more plentiful than elsewhere, while a few migrate to Cuba, Central Mexico, and southern Lower California.

Mallard:

The mallard, "Anas boschas," is a fresh-water duck, and in general it winters as far north as open water can be found. The greater number, however, spend the winter in the southern half of the Mississippi Valley, and during past years this region was the source of a large part of the market supply. The numbers killed were almost incredible. I have heard of instances where a single gunner killed and sold as many as 8,000 mallards. Fortunately market shoot-

ing is now forbidden and this deplorable slaughter has ceased, or has been materially lessened.

The mallard winters casually in eastern Massachusetts and central New York, accidentally in Nova Scotia, and regularly from Virginia to northern Florida. It is less common in Central Florida, and has been recorded in the Bermudas, Bahamas, Cuba, Jamaica, Grenada, Carriacou, Panama, and Costa Rica. Most of these localities have had but one or two records each, showing that the mallard is only a straggler to the southeast of the United States. It has never been known, or at least, is not recorded from Central America from Costa Rica to Mexico. The species is a common winter resident of northern Mexico and ranges south to Jalapa, the valley of Mexico, Colima, and southern end of Lower California.

The northern winter limit of the mallard in the interior is in Ohio, northern Indiana, southern Wisconsin, Nebraska, Wyoming, and central Montana. It is also a common winter resident along the whole Pacific coast as far north as the Aleutian Islands.

Black Duck:

The group of "Anas obscura" or "black and dusky" ducks comprises several species which resemble each other closely and which have only in late years been distinguished intelligently. The black duck is the common breeding duck of New England and northern New York.

This species spends the winter rarely in the West Indies, Bermudas, in central Florida and also in Alabama. From Georgia northward it is more common, and from North Carolina to New Jersey it is one of the most numerous winter ducks. Both the species "A. obscura" and "A. rubripes" are common at this season in the vicinity of Long Island and on the shores of Rhode Island and Massachusetts, but the latter appear to winter to a greater degree in Massachusetts than the former. West of the mountains there is

an uncertainty as to which form predominates during winter. "A. obscura" is a pretty common winter resident in Louisiana, while "A. rubripes" reaches Arkansas, and one form or the other ranges in winter as far north as southern Ohio, southern Indiana, and southern Illinois.

Florida Duck:

"Anas fulvigula," or Florida duck, is a non-migratory species, breeding commonly in the southern half of Florida, and less commonly in the northern part of the State. It appears to be absent entirely from northeastern Florida, but occurs along the northwestern coast.

Mottled Duck:

This bird, "Anas fulvigula maculosa," is a resident of Texas and southern Louisiana. In the State of the "Lone Star" it occurs from the mouth of the Rio Grande northward and west to about the central part of the State. It is also accidental in Kansas.

Abert Duck:

This species is known only from the type specimen taken at Mazatlan, Mexico, designated "Anas aberti."

Diaz Black Duck:

This duck, "Anas diazi," is a form of "black duck" resembling very much "Anas fulvigula." It is non-migratory and occurs in central Mexico.

Gadwell:

The principal winter home of the gadwell, "Chaulelasmus streperus," is in the lower Mississippi Valley, es-

pecially in Texas, Louisiana, and Arkansas. Infrequently it winters as far north as Illinois, and is more common to the eastward in North Carolina and Florida. The winter range extends to the southern end of Lower California, to Mazatlan, and the City of Mexico. In the northern part of Mexico this species is common throughout the winter, and birds have been found paired in May, the late date being an indication that they intended to remain there and breed. Its winter range extends commonly to Utah and Oregon; seldom to Washington and British Columbia.

European Widgeon:

This species "Mareca penelope" is a member of the Old World family of ducks, but it occurs as a straggler on the Atlantic coast in Florida, North Carolina, Virginia, Maryland, Pennsylvania, New Jersey, New York, Massachusetts, Nova Scotia, Newfoundland, and in Greenland, while in the interior it has been discovered in Illinois, Indiana, Michigan, Ohio, Wisconsin, and Nebraska, and even on the Pacific coast in California, British Columbia, and Alaska, but it is not known to breed anywhere in the Western Hemisphere.

Baldpate, or American Widgeon:

"Mareca americana" is common on the Chesapeake during the winter, but is rare directly northward at all times of the year, and, therefore, it is evident that the migration is from the northwest. This species is quite common in wintertime in the Carolinas, less common in Florida and Cuba, and rare in the Bermudas, the Bahamas, Jamaica, Porto Rico, St. Thomas and Trinidad. Its winter home in the Mississippi Valley extends as far north as Illinois, and in the west to New Mexico, Arizona, probably Utah, and to southern British Columbia. It is most common, very likely, along the Pacific coast during the winter.

European Teal:

"Nettion crecca," or European Teal, is a species that is widely distributed in the Old World, and is accidental in the Western Hemisphere. It has been recorded in Greenland, Labrador, Nova Scotia, Maine, Massachusetts, Connecticut, Long Island, in the vicinity of Washington, D. C., California, and Alaska.

Green-winged Teal:

This duck, "Nettion carolinense," is common south of the United States in Mexico, at least as far as Jalapa, the City of Mexico, Michoacan, and Jalisco. It is also common in the Bahamas, but is rare in Cuba, Jamaica, and Honduras. This species is one of the most abundant ducks throughout the southwestern United States during winter. It is very hardy, and in general remains as far north as open water may be found. It winters in western Montana, up to central Utah, southern Nebraska, southern Iowa, central Illinois, central Indiana, western New York, and Rhode Island. Its principal winter home, however, lies in the Mississippi Valley south of latitude 37 degrees.

Blue-winged Teal:

"Querquedula discors," or Blue-winged Teal, migrate over a vast territory, and are found throughout northern South America, south to Brazil, Ecuador, Peru, and Chile, during winter. In Central America they are plentiful, as well as in Mexico and the West Indies, and they are equally common during the winter in the Gulf States and north as far as North Carolina. They do not range much north of the Gulf States in the Mississippi valley, though a few scatter widely as far as southern Indiana, and southern Illinois; while a few winter in Arizona, California and north to southern British Columbia. This species is not com-

mon, in the strict sense of the word, much north of North Carolina, though it is not rare on Chesapeake Bay and winters as far north, even, as Delaware. It is not a hardy species, and therefore, few individuals remain where there is cold weather and ice.

Cinnamon Teal:

This species, "Querquedula cyanoptera," does not retire but slightly south of its breeding range for the winter. It is found at this season as far north as Brownsville, Texas, central New Mexico, southern Arizona, and around Tulare Lake, California. South of Mexico the only record is of accidental occurrence in Costa Rica.

Shoveler:

A few "Spatula clypeata," or shovelers, pass south in winter to Columbia, South America, Panama, Costa Rica, and through the West Indies. This species is accounted rare in Florida, and seems not to have been noted in the Bahamas.

The Carolinas are the only states on the Atlantic coast where they are common, but it is not rare in Maryland, and there are a few winter records for New Jersey; however, the greater part of this species winters in the southern Mississippi Valley, north rarely to southern Illinois, and as far south as central Guatemala, through Mexico. Many hundred thousands are reputed to winter near Lake Chapala, Jalisco. During winter this duck is also found in New Mexico, Arizona, the whole of California, and a few are found as far north as southern British Columbia. Great numbers winter in the Hawaiian Islands. During the flight between their winter and summer home they pass through the northeastern United States, frequently through Pennsylvania and New York, and formerly it was not rare in Massachusetts; however, for the past fifteen years, only in-

dividuals of a small number have been recorded for the whole of New England.

Pintail:

"Dafila acuta," or Pintail, are quite common on the coast of North Carolina, and as far south as Florida, while many spend the winter in Cuba, a few pass on to Jamaica, and individuals have been recorded in Porto Rico. This species is known as one of the common winter ducks that are found from Mexico to Costa Rica, and a few winter as far north as Pennsylvania and New Jersey. Only a few winter in the Mississippi Valley north of southern Illinois, and from there the winter home extends through Texas, New Mexico, Arizona, and on to the Pacific coast, where it is abundant at this season as far north as British Columbia. The species also is known to winter in southern Ohio, and southern Indiana, also in southern Wisconsin.

Wood Duck:

This duck is one of the most popular of American waterfowl, though greatly diminished in numbers from its former abundance, and is scientifically called "Aix sponsa." It migrates north tolerably early, after spending the winter in North Carolina, occasionally in Maryland and Pennsylvania, and in the interior as far north as southern Indiana, southern Illinois and Kansas.

Redhead:

"Aythya americana," or redheads, have their winter home not far from Texas, along the Gulf and Atlantic coasts, to Chesapeake Bay, and a few winter near Long Island, Cape Cod and Lakes Ontario and Erie; the Mississippi Valley north to Illinois and Kansas, and in the west to New Mexico, Arizona, sometimes Utah, Nevada, and southern British Columbia, almost as far north as it breeds.

Canvasback:

"Aythya vallisneria," or canvasback have for a summer home an area which begins over a thousand miles west of Chesapeake Bay, which, until recently, was also a favorite winter home for this species. The line of the Great Lakes appears to be the general route traversed in this southeastward migration, and a few ducks stop for the winter as far north as Lake Erie and western New York. The large flocks that hitherto covered Chesapeake Bay are no more; however, a few winter on the coast of the Carolinas.

The winter range extends from the Valley of Mexico north to southern Illinois, Colorado, Nevada, and southern British Columbia.

Broadbill: Scaup Duck: Blackhead: Bluebill:

This is one of the most important game birds of the Atlantic coast region from Massachusetts to Chesapeake Bay, being probably more common here during the winter than it is in any other part of its range, while most of the lesser scaups winter south of that district, being most common from North Carolina to Florida.

The greater scaup also ranges nearly to the southwestern boundary of the United States in southern Texas, southern New Mexico, central Arizona, and to the vicinity of San Diego, California, while a few winter in southern Colorado, southern Utah, and more commonly in Nevada, and on the Pacific Coast north to the Aleutian Islands. It also winters throughout the Mississippi Valley north as far as southern Wisconsin, but is hardly more than a straggler in winter north of the Ohio river. Its scientific designation is "Aythya marila."

Ring-necked Duck:

The principal winter home of this duck, "Aythya collaris," is the Gulf Coast, from Florida to Texas, and it is

locally the most abundant duck at this season in this region. It is also a common winter resident of the Bahamas, of Cuba, sometimes Jamaica, while on the mainland it is a rare visitant to California and Lower California, but is common in Mexico and ranges all the way to central Guatemala. Its northward range extends to the Carolinas and on to Maryland and New Jersey, however being rare in the latter two States; thence it ranges westward to southern Illinois, northern Texas, New Mexico, and north on the Pacific coast to southern British Columbia.

American Golden-eye.

The American golden-eye is accounted one of the hardiest of ducks, its northern distribution in winter being governed only by the presence of open water, a necessity to nearly all species of the duck family. Its scientific name is "Clangula clangula americana." It is somewhat common on Lakes Michigan, Erie, and Ontario, and during mild open winters it has been known to remain north to Prince Edward Island. All winter it is quite common along the New England coast, continuing to be common all the way down the coast to North Carolina, but gets less common south of that State. In the interior it remains during the winter north as far as Iowa, Nebraska, and Utah, while on the Pacific coast it is found at this time north as far as the Aleutian Islands.

Barrow Golden-eye:

The great majority of the breeding birds of eastern Canada stay through the winter around the Gulf of St. Lawrence, however, a few straggle southward, being recorded in Maine, New Hampshire, Massachusetts, New York, and Virginia. Scientifically it is known as "Clangula islandica."

Buffle-head:

"Charitonetta albeola," or Buffle-head, does not range in winter, generally speaking, south of southeastern or eastern United States. To the westward a few enter Mexico to the Valley of Mexico and Lower California to San Quentin. This duck is a common winter resident of the southern half of the United States, north to Massachusetts; Lakes Ontaria, Michigan, and Huron; Utah, Idaho, British Columbia, Unalaska Island, and the Near Islands.

Old Squaw:

These birds are common south to Chesapeake Bay, and as far south as the North Carolina coast region are not rare. In mild winters they have been known to winter in the Gulf of St. Lawrence, while some stay in southern Greenland. They are an abundant winter resident on the Great Lakes; on the Pacific coast from the Aleutian Islands southward, being quite common to the coast of Washington and not rare to northern California. Its scientific designation is "Harelda hyemalis."

Harlequin Duck:

During the winter season, the harlequin, or "histrionicus histrionicus," is not rare in the southern part of the Gulf of St. Lawrence, is less common south to Long Island Sound, and accidental on the coast of New Jersey. It is a frequent winter resident on Lake Michigan, winters in Colorado, which is the southern limit of its breeding range but at several thousand feet lower altitude. It is abundant in the Aleutians and the Pribilof Islands, west to the Near Islands, the Commander Islands, and sometimes as far as Japan.

Labrador Duck:

"Camptolaimus labradorius," is an extinct species, which within the last century nested from Labrador north-

ward, and during winter it visited the coast of New England; as far south also as Long Island and New Jersey.

Steller Eider:

"Polysticta stelleri," winters abundantly on the Near Islands and as far north as Unalaska, the Shumagins, and the Kenai Peninsula.

Spectacled Eider:

Winter records are few for this species, "Arctonetta fischeri," but it is probable that the Aleutian chain constitutes the main winter residence.

Northern Eider:

"Somateria mollissima borealis," or northern eider, ranges in winter from southern Greenland and northern Hudson Bay south on the Atlantic coast as far as Massachusetts.

American Eider:

"Somateria dresseri," or American Eider, winters as far north as Newfoundland; is common in the Gulf of St. Lawrence, and not uncommon as far south as the coast of Massachusetts, while in the interior it occurs on the Great Lakes and neighboring regions.

Pacific Eider:

"Somateria v-nigra," or Pacific eider, appears to spend the winter, generally speaking in the vicinity of the Aleutians.

King Eider:

This duck breeds in the Arctic regions, and winters as far north as open water may be found, at least north to southern Greenland, being common in the Gulf of St. Law-

rence; the species has also been noted occasionally in the interior on Lakes Cayuga, Oneida, Ontario, Michigan, and Erie. The Pacific members of this species winter freely in the Aleutians; south to the Shumagin and Kadiak islands. Scientifically it is called "Somateria spectabilis."

American Scoter:

"Oidemia americana," is the scientific term by which this duck is called, and it remains in winter around Newfoundland, except when driven away by drift ice. Southward it is not rare to Long Island Sound and the coast of New Jersey. Inland, it is not uncommon on the Great Lakes, and has been recorded at various places in neighboring states. The Pacific birds winter from the Aleutian Islands south to Santa Barbara Islands, California, and also west to Japan on the Asiatic side.

White-winged Scoter:

"Oidemia deglandi" range in winter through the Gulf of St. Lawrence, south along the Atlantic coast to South Carolina, while in the interior it ranges south regularly and commonly to the Great Lakes, and less commonly in adjoining small bodies of water in the neighboring states. On the Pacific coast it winters from Unalaska Island to San Quentin Bay, Lower California.

Surf Scoter:

"Oidemia perspicillata," or Surf Scoter stays during the winter around the Gulf of St. Lawrence until forced away by ice, and passes the balance of the winter from about the Bay of Fundy south to Florida. It is exceedingly abundant from Massachusetts to New Jersey, and still common to North Carolina. On the Pacific coast it extends from the Aleutians south to San Quentin Bay, Lower California.

Ruddy Duck:

"Erismatura jamaicensis," or Ruddy Duck, has a wide winter range, some retiring in winter to the southern part of the range, to southern Lower California, Tepic, Valley of Mexico, Oaxaca, and Central Guatemala, while others remain as far north as southern British Columbia. It is also found in winter in Southern Illinois, Pennsylvania, the coast of Massachusetts, and even to Maine. Also from the Chesapeake Bay to Florida it is quite a common winter resident, though rapidly being diminished in numbers.

Mallards Best for Wild Duck Farms:

Raising mallard ducks is an industry that should particularly appeal to the average sportsman, an industry calculated to supplement the decreasing natural supply of game.

The ease with which the mallard can be bred makes it the best species for wild duck farming, and its beauty, popularity, hardiness, adaptability and fecundity fit it as no other duck is fitted to become the game duck of the future.

When it is realized that only one-tenth of the food of the mallard is derived from the animal kingdom and about nine-tenths from the vegetable, it will be seen how easy the problem of propagating these ducks would be. They feed mostly on aquatic plants, such as the sedges, water grass, smartweeds, pondweeds, duckweeds, coontail and other semi-aquatic plants. A government expert recently found in the stomach of one mallard 102,400 seeds of primrose willow. It is also known that they feed on water beetles, bugs, and dragonflies.

If you own ponds, lakes, or can improve such bodies of water, it would be possible to breed and raise mallards in a semi-domesticated state at little cost.

For the sportsmen who desire to engage in this worthy enterprise, the writer has compiled information relative to

suitable aquatic plants for the attraction of waterfowl from trustworthy sources.

Information concerning the propagation of valuable wild-duck foods is constantly requested by State game commissions, game protective associations, and sportsmen's clubs, and also by individuals interested in the protection and propogation of waterfowl. The U. S. Biological Survey has endeavored to meet the demand by issuing this information in bulletin form, under the direction of W. L. McAtee, Assistant Biologist, to whom I am indebted for this data. The widest dissemination of this knowledge among the American people is in line with the policy of the Department of Agriculture.

Wild Rice and its Value as Duck Food:

Wild rice (Zizania palustris and Z. aquatica) in all stages of its growth is eaten by one or another of North American ducks and geese, and practically all of them feed on its ripened grain. It is the staple fall food of many ducks in the numberless rice marshes of the eastern United States. The seeds are obtained mainly from the bottom in shallow water, where they have fallen into a bed of soft muck to await germination. This is often so delayed that grain may sprout at any time up to at least 18 months after ripening. This accounts for the fact that young shoots and germinating seeds of wild rice are found in ducks' stomachs at nearly all seasons. The shoots are devoured by many species, the flowers have been found in the wood duck's stomach, and the stems and leaves of the mature plants are eaten by geese.

The government expert says that of the food of 209 mallards examined, more than 17% was wild rice, 12% of that of 51 black ducks, and more than 11% of that of 75 wood ducks. The Canada goose, snow goose, pintail, widgeon, lesser and greater scaups or bluebills, canvas back, redhead,

green-winged and blue-winged teal, buffle-head, and ruddy duck are also known to feed considerably upon this plant.

Description of Wild Rice:

Wild rice is a tall, round-stemmed grass with long, flat, pointed leaves. The stem, which may be as much as 2 inches in diameter, is hollow, but is furnished with transverse partitions between as well as at the joints. These partitions may be seen when the stem is cut lengthwise. The base of the stem is in the form of a stout hook, and from it arise the numerous fibrous roots which serve mainly to anchor the plant to the bottom. The flowers of wild rice usually appear during the latter part of July, but may be found as late as November. The appearance of the flower head is very characteristic; the lower branches which bear the staminate or male flowers, are widely separated and stand out from the stem, while the upper branches of pistillate flowers are erect and more compactly grouped. The grain of wild rice is from one-half to three-fourths of an inch in length, slender, of uniform diameter, and with rounded or pointed ends. A low rib runs along the whole length of one side and a shallow groove along the other. The husk of the seed has six longitudinal grooves and a long, pointed beak, the whole being an inch and a half or sometimes even more in length. The appearance of the flower head or of the grain distinguishes wild rice from all other aquatic grass in its range.

Distribution of Wild Rice:

Natural growths of wild rice occur from the northern end of Lake Winnipeg eastward along the northern shores of the Great Lakes and the St. Lawrence River to New Brunswick; from the central Dakotas, western Nebraska, and eastern Texas to the Atlantic coast; and as far south along that coast as central Florida. The plant is somewhat

local and of course is confined to the lowlands, the center of its abundance being in Wisconsin, Iowa, and Minnesota.

Propagation of Wild Rice:

Although wild rice does not grow naturally in every suitable place within its range, in most cases it can be made to do so, says the bulletin, by transplanting. Formerly wild rice was often transplanted by various tribes of Indians, and investigations by the Bureau of Plant Industry have shown that with proper treatment of the seed the plant may be propagated in any favorable waters in this country. It has also been successfully grown in European countries. However, experimenters should be prepared for occasional failure, for the plant sometimes refuses to grow in localities which appear to have every requisite for its successful propagation. The usual cause of failure has been improper treatment of the seed between time of harvesting and time of sowing, resulting in loss of vitality. When growing naturally, the ripe seeds fall directly into the water, where they sink, and, being equipped with barbed beaks, penetrate deeper into the muck surrounding the roots of the parent plant. There they lie through the winter. They may germinate in spring, or they may lie practically dormant through still another cold season. The seeds therefore remain wet until ready to sprout; they are exposed to currents of water; are not in close contact with each other, and are not subjected to very high temperatures. As in everything else, to succeed, one must imitate nature's methods. To keep large quantities of the seed in close contact often causes fermentation, but this may be prevented by cold storage.

So far as propagation depends on the preservation of the vitality of the seed, the methods so carefully worked out by the Bureau of Plant Industry insure success. Several seed firms handle wild rice properly and will deliver it either in spring or fall as desired. Notable among these is

Clyde B. Terrell, of Oshkosh, Wisconsin, who has done a great deal for the scientific propagation of wild rice and wild celery. It is a pity that more sportsmen do not engage in this field, as nothing is more beneficial for the increase of wild water fowl, now so greatly decimated for lack of attention and protection in years passed by.

Where to Plant Wild Rice:

Wild rice thrives best on a mud bottom, though it has been known to grow in sand. This may be underlain by various soils, but there should be a layer of mud from at least 2 to 4 inches deep, preferably even deeper. Wild rice usually does not do well where there is much current or change in the level of the water, although it grows abundantly on tide flats. It is not adapted to entirely stagnant water.

From 4 inches to 6 feet of water are about the limits of its usual occurrence, and it does best in from 1 to 3 feet. In shallow water it may be killed by heat in summer, so it is best, in southern localities especially, to sow the seed in not less than 2 feet of water.

How to Plant Wild Rice:

The least possible time should intervene between removal from cold storage and sowing. Broadcast sowing answers every purpose, and seed should be sown thickly, as, when near together the plants support each other, the root anchorage is protected, and a good stand is more likely to result than if the seed is more widely scattered.

When to Plant Wild Rice:

The most desirable time for sowing is usually said to be in the fall, but it has been proven that spring sowing will bring a full crop, and for several reasons spring sowing is

usually advisable. Where seed has been sown in fall, the bottom may freeze and the seed will be carried off with the ice floes of spring. Ducks and other water-fowl, as well as some fishes, eat the seed, and the less it is exposed to their depredations the better. Seed is likely also to be buried by deposits of mud, or swept away by currents, especially in freshets. These dangers may be avoided by sowing late enough in spring to avoid the worst spring floods, but in time to get the benefit of the first good growing weather; that is, when the temperature of the water approaches 60 degrees F.

Wild Celery and its Value as Duck Food:

When we think of wild celery, we also think of the canvas-back duck, for the two are closely associated in the annals of American sport. It is a well known fact that the canvas-back is very fond of the subterranean propagating buds of this plant, yet the assertion that the flavor of the canvas-back is superior to that of any other duck and that this depends on a diet of wild celery is not proven, according to Mr. McAtee, to say the least.

The scaups, or bluebills, and the redhead are also very fond of wild celery, and are fully as capable of getting the delicious buds as is the canvas-back. Several other species get more or less of this food. Mr. McAtee finds that even the scoters on a Wisconsin lake in fall lived almost exclusively on it for the time. All parts of the plant are eaten by ducks, but the tender winter buds and rootstocks are most relished. Wild celery buds can usually be obtained only by the diving ducks, such as the bluebill, red head, canvas-back, and scoters. The nondiving species, like the mallard, black duck, baldpate, and the geese, get an occasional bud, but they more frequently feed upon the leaves. Wild fowl not thus far specifically mentioned which also feed upon wild celery include the wood duck, pintail, ruddy duck, buf-

fle-head, whistler, green-winged teal, greater and lesser scaups or bluebills, white-winged and surf scoters, and whistling swan.

Description of Wild Celery Plant:

Wild celery is a wholly submerged plant with long, flexible, ribbonlike leaves of light translucent green and of practically uniform width (anywhere from 1/4 to 3/4 inches) from root to tip. Of course the leaves are narrowed near the tip and may be somewhat serrate or wavy-margined there, but they are never expanded and the venation is peculiar, according to McAtee. A leaf held up to the light displays numerous fine straight parallel veins running the whole length. There are, besides, one median and two lateral prominent veins connected at intervals by irregular cross veinlets. Wild celery (Vallisneria spiralis) may be distinguished from eelgrass (Zostera marina), which lives in brackish or salt water, by the fact that its leaves grow in bundles from the rootstocks, while those of eelgrass arise singly and alternate on opposite sides of the stem. The leaves of wild celery generally are more than a fourth of an inch wide, while those of eelgrass are about that width or narrower. Pipewort (Eriocaulon), a fresh-water plant, frequently having ribbonlike leaves, may be recognized by the reticulation of the entire leaf into small cells by veins of nearly uniform size.

In certain stages some of the arrowheads (Sagittaria) are difficult to distinguish from wild celery, though they usually have the end of the leaf expanded into a proper leaf blade or else quite pointed, neither of which characteristics will be found in Vallisneria. Investigation of the subterranean organs will decide the matter, however.

The flowers of wild celery are usually to be seen in July and are peculiar in appearance. The staminate flowers, at first attached at the base of the plants, later float

on the surface of the water and fertilize the pistillate flower. The latter is attached to a long, slender, round stem, which contracts into a spiral, drawing the flower under the water after fertilization. This spiral stem, bearing the flower or pod, distinguishes wild celery from the other plants mentioned. The seed pod into which the pollenized flower develops is straight or curved, a little slenderer than a common lead pencil, and from 3 to 6 inches in length; it contains, embedded in a clear jelly, small dark seeds, in number about 50 to the inch. Mr. McAtee states no such pod is borne by any other fresh-water plant.

Distribution of Wild Celery:

Wild celery is found naturally from central Minnesota through the Great Lake region to northern Nova Scotia, and from eastern Kansas and eastern Texas east to the Atlantic coast. Like wild rice it is more or less local in distribution, and consequently may be absent from large areas within its general range.

Propagation of Wild Celery:

Wild celery is comparatively easy to transplant. It can be propagated both by seeds and by winter buds, and the plant itself may be taken up and set out at almost any time. Floating fragments of the plant with a little of the rootstock attached, picked up in midsummer by Mr. McAtee, rooted and grew successfully. He states the prime requisites in propagating celery are the same as in the case of rice; the buds, plants, or seeds must not be allowed to dry or to ferment between gathering and planting. The seed pods ripen from September to November and fall to the bottom. They are best collected (by net or rake) on days when the water is least ruffled during the latter part of October and early November. The winter buds may be collected at the same season, before the leaves have disap-

peared, by following the latter down and digging up the rootstocks and buds; or the young plants may be taken up in spring just as they sprout. They should be kept moist and cool until wanted for planting. It, as well as wild rice seed, may be stored in partly filled burlap bags, among which blocks of ice are placed and the whole covered with sawdust and kept wet. In cold climates seed may sometimes be perfectly preserved by keeping the seed in water which is changed daily, and kept out of doors during the winter, except when frozen, germinating very satisfactorily. This also applies equally to wild rice.

Where to Plant Wild Celery:

Wild celery, Mr. McAtee found, grows best on muddy bottoms in from 3½ to 6½ feet of fresh water, though it will grow also in sand and in both deeper and shallower water. A sluggish current suits it better than either stagnant or rapid water.

How to Plant Wild Celery:

For sowing, the pods should be broken up (in water) into pieces about ½ inch in length, which can be sown broadcast—not too thickly, as the plants spread rapidly by rootstocks and will soon make a dense growth. The winter buds or pieces of roots with tufts of leaves must be weighted to hold them to the bottom and enable them to take root. This may be accomplished by loosely threading several plants together and tying stones to them, or by embedding them in balls of clay. The broken seed pods also may be put into clay and dropped into the water.

When to Plant Wild Celery:

If not likely to be covered by mud, the best time to sow the seed pods is in the fall. Winter buds collected in fall should be kept in cold storage, and these, as well as young plants gathered in the spring, should be set out in May or June.

As wild rice and wild celery constitute the principal aquatic plants suitable for the attraction of wild waterfowl, we deem it unnecessary to take up the consideration of the less important ones.

THE AIREDALE TERRIER:

Although not imported into this country from England until about the years 1897-98, the Airedale terrier has become immensely popular in the New World in this short span of years. This is attributed to the fact that this dog, because of his keen scenting powers, gameness, and general hardihood, is much esteemed by all men who rejoice in a good, strong, sensible and faithful companion, whether it be within the confined quarters of a city life or in the more open and workaday surroundings of the forest and river. Strictly speaking, the Airedale is a waterside dog. He takes his name from the valley or dale of the river Aire in Yorkshire, England; and it was in the early "seventies" that he was recognized as a distinct and separate breed on the British benches. It was in the "eighties" that the first of these dogs were imported for exhibition purposes; they were placed in the miscellaneous classes at shows. Today they are peculiarly representative in the United States and Canada. Indeed, it is no exaggeration to say that America now possesses as good Airedales, perhaps as a body, better than are owned anywhere else in the world. The foresight, acumen, inclination and liberality of certain owners on this continent, who have in their kennels only the best dogs and bitches of the breed they could obtain anywhere, are the things that have aided the ascendency of the Airedale to his present state of popularity.

The Airedale terrier, like many other useful domestic animals, was originated from two, three or more breeds. The foresight of fanciers of fifty or more years ago was responsible for what we have today in the make and shape of the beautiful black or blue grizzle and tan Airedale of the

moment. The finesse of the intelligent breeder is seen in every limb and muscle of the dog's body; his high breeding and faultless outline, combined with his apparent utility, is patent to any man or woman who cares to take in his general appearance and reason out the whys and the wherefores of his existence. From the old-fashioned rough Scottish terrier, or maybe the rough black and tan kennel terrier of other days, crossed with the hardbitten bull and terrier, we are said to have obtained the first progeny that was the one root of the now deservedly popular Airedale. But our workingmen friends, fond of a bit of hunting on the small river and brook sides of the dale of the Aire, wanted a dog with more nose—one that could wind a rat or a moor hen across the stream, or pick up the drag of a chance otter whose presence they might discover through the track of his peculiar hind-toeless "seal" on some silted sand or landing place on the side or middle of a creek. This trail, perhaps already six and thirty hours old, the Scottish fighting-dog cross would fail to recognize, and, naturally, the lone hunting fellow would cast about for some dog possessed of sufficiently acute olfactory organs to be able to recognize this scent and carry it on to where the otter was surveying the river from a point of vantage in the fork of an old willow tree, on the bank, safe below in his hole, the opening of which he would dive to reach, or the snug surroundings of an oozier bed, hassocks of moorgrass or the dry and warm bed on top of a hedge or bank. In a jiffy our sportsman knew he must have something else in his already cross-bred dog; his mind at once went out to the Otter hound or Welsh hound, for well he knew that both of these had a rightful reputation for wonderful noses, handed down to them in turn from the mighty old Talbot hound, the Adam of all, or nearly all, hounds and dogs that depend upon their scenting powers to provide their masters with the sports of the chase and the benefits of the well-filled larder. Again, the Otter and Welsh hounds were rough and wiry in coat; they were

good water dogs, and their constitution was such that they could withstand all weathers and the wear and tear of work in a foreign element that is particularly trying to humans and nearly all quadrupeds. Out, then, of the rough terrier, bull terrier and hound cross there arose the dog that we know today as the Airedale terrier; and a better creature does not stand on four legs, when we consider him from the points of elegance, unison of build, thoroughness in dash and intensity of purpose; in the contour of his breedy appearance, and his known adaptability to all climates and under any and all conditions where he is called upon to act as a real companion to man. This is, assuredly, a great character, but no phrase or set of phrases can be found that adequately describes this great strain of the canine family. The Airedale is in a class all to himself and deservedly so. Today the Airedale enjoys wide popularity. He is everywhere. I have seen him at the hardest of the most devilish work, midst the extremely severe winters of ice-clad Canada and the sweltering forests and bush looking out onto the Indian Ocean and the blue waters of the South Pacific. For the large carnivore, he is in considerable use in this country, especially in the regions of the Great Divide—the backbone of the continent, the mighty and always alluring Rockies. As a tracker of wounded deer he is at your service, while it doesn't take you long to make him an ideal coon dog. Rats in his mouth are as strawberries in yours, while as a duck dog he will retrieve with the best of them. He is, indeed, something more than the poor Sunday-hunting workingman, operative or mill hand, watersider or "manufacturer" dreamed he was. For the local Aire dog has become a world-wide celebrity, used by the human being of ability for almost everything; hunting large and small game; as a trained policeman's dog; the pick of all dogs for army ambulance service. The Airedale is truly a jack of all the dog trades. The many thousands that watched the public work of the New York City police dogs at Madison Square

Garden, New York, in February, 1908, were satisfied that the most satisfactory performance given was by an Airedale, although there were several of another breed (Belgian sheep dogs) that had been trained abroad. The muzzled Airedale rushing in between the supposed felon's legs, soon had him on the ground and at the mercy of the representative of law and order.

With all the go-aheadness and sprightliness of the Airedale, it cannot be said he is quarrelsome. The hound blood that is within him appears to have wiped out, for the nonce, the sheer wickednss of the bull and terrier. We know that a hound will rather run than fight, any day. Alone he is a bit of a coward; in a pack he becomes brave as a villain in a mob. It is the other way with a bull and terrier. And so it was with the old cut-eared Scotch dog, another such with the arguments of his teeth. But the Airedale is, broadly speaking, all right, until he is set on to his own kind or anything else that breathes. With the rising of his hackles something's going to suffer, even if he dies in the battle. And that must be the reason for the universal popularity of the dog now under notice.

There has been a steady upward value in Airedales ever since 1890. A fancy price to put on a dog, a champion, at a show in England, at that time would have been a hundred pounds sterling (about $500). He could probably have been obtained at half that figure, or less. A good ordinary dog would have cost about $50, and this dog could have won with the leading champions of the day out of his way. Now, matters have changed, and $1,000 has been paid for dogs now in America.

The Airedale is essentially a general purpose, and can be taught to do anything a dog can learn. As a hunter he has no superior, and his wonderful popularity in the West is due to his aid to the huntsman of big game, being possessed of a marvelous nose, a powerful physique, and the agility of a cat, which, coupled with the grit equal to a pit Bull dog,

without the quarrelsome disposition, has won him friends innumerable in every clime. The Airedale takes to water like a muskrat, having been crossed in his early ancestry with the Otter hound, and being used in England to hunt the streams as well as the thickets. As a duck dog he is considered superior to the Chesapeake or Spaniel. His coat dries quickly, being wiry and not shaggy. As a watch dog and companion for children he is unexcelled, guards the home faithfully, is affectionate, kind and very intelligent, but is not everybody's dog and does not fall in love with Tom, Dick and Harry just because they pat him on the head.

TheAiredales, when born, are black and grow lighter as they grow older.

The head is long with a flat skull, not too broad between the ears, and narrowing slightly to the eyes, free from wrinkle; stop hardly visible, and their cheeks are free from fullness. The jaw is deep and powerful; well filled up under the eyes, lips tight; ear "V" shaped, with a side carriage, small but not out of proportion to the size of the dog; the nose black, the eyes small, dark in color and full of terrier expression.

The teeth are strong and level.

The neck should be of moderate length and thickness, gradually widening towards the shoulders and free from throatiness.

The shoulders should be long and sloping well into the back, shoulder blades flat.

Chest is deep but not broad; back short, strong and straight.

The hips are well sprung.

Hind-quarters should be strong and muscular, with no droop; hocks well let down.

The tail is docked and set on high and carried gaily, but not curled over back.

The legs must be perfectly straight, with plenty of bone.

The feet should be small and round, with a good depth of pad.

The coat should be hard and wiry, and not so long as to appear ragged, lying straight and close, covering the dog well all over the body and legs.

The color of the Airedale is as follows: The head and ears, with the exception of dark shadings on each side of the skull, should be tan, the ears being of a darker shade than the rest, the legs up to the thighs and elbows being also tan, the body black or dark grizzle.

Size of the Airedale should be—dogs, 40 to 45 lbs., bitches, slightly less.

(Note: The following news items were taken from Ledger & Blade, of Chicago.)

Dogs of St. Bernard:

All but a pitiful half-dozen of the famous St. Bernard dogs kept by the monks of that ancient monastery in the Alps were killed during the world war, according to a report from Paris. Meat shortage was the stated cause of this blind act.

The St. Bernard pass is of historical interest, as it connects the valleys of the Rhone and the Dora Baltes. It was traversed by Roman legions many centuries ago, and in mediaeval times this pass served the armies of conquerors and the bands of mercenaries. Napoleon crossed the Alps at this point in 1800.

The great monastery was built in the middle of the 16th century. It was maintained for the relief of travelers who were surprised and overtaken by snow-storms while crossing the Alps. The St. Bernard dogs were used to find the frozen victims of the storms in the snowdrifts. They were especially trained for this work of relief and carried first aid to the injured in a little basket attached to their collars. These dogs rescued thousands of human beings, many of

whom were of historic prominence. And for the first time in the history of this famous monastery the dogs had to be slaughtered for apparent lack of food.

At less critical times a report of this sort would create widespread indignation, but at the present time the human race is thinking so much of its own dilemma that it has no symapthy to spare for dog heroes living more than 8,100 feet above the surface of the sea.

Trees From Which Many Medicines Are Made:

Any physician will tell you that the most useful and most used stimulant to the heart and for the nervous system is "Strychnia." This is an alkaloid found originally in the seed of the strychnos nux-vomica, the poison-nut tree, found in India, Burma, and Siam, and growing also in Cochin China and Australia. It is of moderate size and has a fruit the size of a small orange, with a hard shell and a bitter pulp enclosing one to five seeds, less than one inch in diameter and one-fourth inch thick and shaped like disks. It is the bitterest substance known, and when one has heart failure, or nervous exhaustion, or is run down or needs a tonic, some doctor is sure to give him the alkaloid from one of these peculiar Indian trees.

Textbooks on medicine frequently refer to "emergency heart stimulants," meaning by this drugs used by hypodermic injection to produce prompt stimulation of a weakened heart. Some of the most valuable heart stimulants require a good deal of time after being taken to produce their effects, hence the need of emergency heart stimulants. Strychnine, we know, is a splendid emergency heart stimulant.

A tree which has various species throughout the world and is of some medical interest, is the acacia. The acacia senegal is the type of tree which furnishes gum acacia, or gum arabic. While acacia is not possessed of any marked curative properties of itself, it is a constituent of many im-

portant preparations in pharmacy, as, for instance, in the making of emulsions, where its heavy mucilaginous qualities make it a valuable vehicle for oily and resinous substances. It is also widely used in the preparation of pills and troches.

Gum catechu, a substance containing tannic acid and used in dyeing, which was at one time extensively used as a remedy in colitis and dysentery, comes from the acacia catechu and acacia sunnis, both native to India.

The Holy Land—A Paradise For Birds:

Swarms of European birds visit Palestine in winter, and many breed there. The cranes, for instance, pass through in winter and in spring the voice of the turtle-dove is commonly heard.

The Holy Land is appropriately a stronghold of the pigeon family; turtle-doves are found, the wood-pigeon comes in myriads in winter, and the common pigeon, the true Scriptural dove, is still abundant, both wild and tame, throughout the country. Contrasted to these is found the crow tribe of several species, and birds of prey from the great griffon vulture, the "eagle" of Scripture, to the sparrow-hawk.

In the deep tropical Jordan valley we find a sort of aviary of real tropical birds, which found there a refuge from the last glacial epoch—the lovely little sunbird, or "Jericho humming-bird," the land-feeding white-breasted kingfisher, and a species of gregarious thrush.

On the coast is found the great Indian fishing owl, and among the rocks of Marsaba the monks have half-tamed the orange-winged blackbird, which is really a starling of African type, as much out of his latitude as the hyrax. One of the birds peculiar to Palestine is the pretty little pigmy Moabite sparrow, which lives in the reed-beds and is one of the rarest birds in the world.

Reptiles are abundant, and even the Nile crocodile, the leviathan of the Bible, lingered long enough to give Tristram the chance of obtaining a specimen nearly 12 feet long, while, in addition to the African cobra, we find the grass-snake among the harmless species, and the wicked little horned viper lies in wait, as in olden times, to bite the heels of the horses.

As for the fish, they are as abundant and varied as ever, and it is interesting to note that the Sea of Galilee is still full of them, and that the commonest kinds are of an African family, an interesting illustration of the scientific interest which unites with the religious to make Palestine among the most interesting of all countries.

Six-Foot Lizards That Furnish Delicious Steaks:

Most persons are averse to the idea of eating the flesh of a reptile, yet when we eat turtle soup or terrapin we are doing just that. Prof. A. M. Reese, of the University of West Virginia, in a magazine statement, admits that no American would knowingly eat a snake, but he thinks that lizards are among our possibilities, and he especially recommends some of the larger ones. Alligators, too, he says make fine eating, and but for silly prejudices would make a voluminous contribution to the supply of flesh food. He goes on to say, writing in the Scientific Monthly:

"Lizards are important to mankind chiefly as insect destroyers, but a few of them are used as food in tropical and semi-tropical lands. Of these the giant iguanas, reaching a length of six feet or more, are the most important. The flesh of these lizards is said to be of a delicious flavor, resembling chicken. In the Bahamas the lizards were formerly one of the most important articles of food; they were hunted with dogs, and kept in captivity until wanted.

"The eggs of the larger lizards are also used as food in some countries.

"Though snakes are esteemed as food in many lands, it is not likely they will ever be an important article of diet in this country, both because of the almost universal repugnance with which they are regarded and because of the comparative scarcity of large serpents within our borders. Our larger black snakes, though reaching a considerable length, are so slender that the amount of flesh in their bodies is not great, and there is probably not one person in ten thousand who would knowingly eat a snake.

With the crocodilia the matter of size cannot be raised as an objection, since the largest members of this family may reach a length of 30 feet and a weight of many hundreds of pounds. Of course, neither an alligator nor a crocodile is a very attractive looking animal, but when skinned and dismembered the body looks no more repulsive than any other carcass that may be seen in any butcher's shop, and the flesh is as white and attractive looking as the best beef or pork.

"The eggs of the crocodilia, which are usually about as large as those of a goose, are often eaten by the natives in the tropics. Never having eaten an alligator egg, I cannot speak from personal experience of its flavor; but it has always seemed strange to me that more use is not made of the flesh of the alligator. This flesh is often said to have too strong a flavor to be palatable; I have eaten it, and it had no such rank taste, but was decidedly agreeable, being as might be expected of so amphibious an animal, somewhat like both fish and flesh, yet not exactly either.

"Perhaps greater care should be taken in skinning an animal that is to be used for food in order that the flesh be not tainted with the musk. It may be a lack of care in preparation that has given rise to the impression that alligator meat is too strong to be pleasant.

"In many parts of tropical America the various species of crocodiles and caymans are said to be very abundant, so that if a means could be devised to preserve the flesh near

the place where the animals are killed a large supply of meat might be obtained."

Wild Burro Steak, a la Shashlik:

The little wild burro has become a pest in certain parts of Arizona. These long-eared brethren are not exactly wild, for the very good reason that they do not possess enough energy and spirit to be inclined that way. The mountain valleys of not only Arizona, but of New Mexico and northern Mexico are overflowing with droves of burros. They infest the mining camps and ranches and are pronounced by those who should know as a nuisance. Hundreds of them are annually killed for their hides and grease, and for the sport they afford in running them or stalking them.

A famous Russian traveler, Dr. C. C. Young, who has lived in the southwest for some few years, suggests that their meat be used for food. Dr. Young states he has eaten the flesh of camels and various breeds of sheep and that these do not compare favorably with burro meat.

"So far as the meat of the young burro is concerned I can only state that I have eaten it for months and like it," he said.

"A fat burro about 1 year old furnishes a steak that will satisfy the taste of the most fastidious, especially if prepared in 'shashlik' fashion, which means that after the steak has been cut into short pieces and properly seasoned it is put on a spear and placed into the low flame of burning saksaul until done.

"Burro shashlik is not as delicious as shashlik made of Karakul mutton, but it is good enough for anybody, and for that reason I cannot understand why there exists so much aversion to burro meat in this southwestern country, especially when one bears in mind that there is no cleaner domestic animal in existence than the burro.

"Smoked burro meat, called 'bastrama,' is very nice and is eaten raw like Westphalian ham, and is especially adapted on long journeys and in hard countries.

"Dried burro meat, resembling the well known Mexican carne seca, is not bad, providing the burro is killed while young, otherwise the meat is very tough, but free from the odor of an old goat."

Jungle Can Furnish Food:

During the war period when food conservation was being discussed pro and con as to ways and means, Randolph L. Summerfield, of Singapore, who has lived for forty years in the Malay States, arrived at Seattle on a government mission, and made the statement that "the world's live stock market has been decimated, but if worst comes to worst and there's a real meat famine, the jungles of the Malay States can supply vast quantities of meats and fats. Our forests are full of monkeys of all kinds. Our streams teem with crocodiles. The huge anaconda snake is numerous and prolific. Monkey meat, cooked French or Spanish style, billed on the menu as veal, would make an epicure yearn for more. There's no disagreeable sentiment about killing a crocodile or the boa constrictor. Portions of the 'croco's' tail are extraordinarily good, and the boa constrictor is a culinary favorite in India. Fried in butter, or certain oils, the boa constrictor is considered a delicacy."

Risk Lives to Catch Fish:

Lads of the tender age of nine to twelve years at the old Indian settlement of La Push, nestling behind the pinnacle rocks that rise out of the Pacific Ocean off the mouth of the Quillayute river in Washington, nobly did their share toward winning the war involving nearly all the world. These lads, scantily clad, are wont to dash across the beach to meet the incoming tide, wade into the water and wait for

the waves to break with fish. As the combers break the lads dash into the boiling surf and rake the ocean for fish. Frequently the waves dash over the boys' heads, but they never lose their footing and the danger of the work does not excite more than passing attention from the old women weaving baskets.

During the day the Indians at La Push village average fully a ton of fish caught with dip nets. The older men help with the curing when their day's work is done, but it is the boys' task to capture the fish.

With each tide thousands of smelt are driven ashore. Each lift of the dip nets from the surf generally brings a basketful of fish.

There are now 250 men, women and children in the little settlement, and each did his or her share with fishing, war gardens and other activities to help win the war.

HISTORY OF HUNTING LICENSES:

How many sportsmen, I wonder, are familiar with the early history and development of the hunting license, its objects and limitations? There are some sportsmen, no doubt, who even think the hunting license that has to be purchased before they are allowed to hunt is unnecessary and unjust; others, perhaps, think licensing game-hunting is O. K., but they are of the opinion the hunting license is a modern device, and so to set all these gentlemen right in their various opinions and beliefs, let us briefly consider the facts as gleaned from trustworthy sources.

First, it is a fact that although most of the present laws have been enacted during the last ten or twenty years, even a hurried review of the subject will suffice to show that the system originated at a very early date in the United States, and was really an outgrowth of a discriminating attitude toward nonresidents. Hunting licenses were required in some of the colonies, particularly Virginia, more than two

hundred years ago, though their object was a little different from those of our time. I quote below one of the early statutes entitled "An Act for a Free Trade with Indians," passed in Virginia in 1691, its object detailed as follows:

"And for the future prevention of such mischiefs as have frequently happened at huntings, commonly called fire huntings and other huntings remote from the plantations, Bee it enacted by the authority aforesaid, and it is hereby enacted, That no person or persons whatsoever shall hereafter presume to goe an hunting remote from the English plantations without first having obtained the lycense and permission of their Majesties leiutenant governour or commander in chief for the time being and the councell of state under such restrictions, limitations and conditions as at the time of giveing such permission shall be by them thought fit to be enjoyned and appointed."

In 1719 nonresidents in New Jersey were prohibited from taking oysters or putting them on board a vessel not wholly owned by a resident.

North Carolina enacted a game law in 1745 providing that all persons not possessed of a settled habitation in that province were required to certify that they had planted and tended 5,000 hills of corn and have said certificate in their possession before they were allowed to hunt deer.

Section 4 of this Act reads as follows:

"That every person who shall hunt and kill deer in the King's waste within this Province, and who is not possessed of a settled habitation in the same shall be obliged to produce a certificate when required of his having planted and tended five thousand corn-hills, at five feet distance each hill, the preceding year, or season, in the county where he shall hunt, under the hand of at least two Justices of the Peace of the said county and the hand of at least one of the churchwardens of the Parish where such person planted and tended such corn, as aforesaid."

This and similar laws from which has sprung the modern hunting license, plainly reveals the discrimination in those early days against the nonresident, which still continues as important sections of our later laws. The law quoted above was amended 23 years later so as to deny persons the privilege of hunting deer who did not possess a freehold of 100 acres of land in the province, or who had not tended 10,000 corn-hills during the previous year. If these laws had progressed in the same direction on down to this day, only the very wealthy would now be able to enjoy the pursuit of game in localities wherein they were nonresident.

Virginia, it is recorded, in the year 1840 prohibited nonresidents from hunting wild fowl on beaches and marshes below the head of tide water, retaining this restriction until as late as 1903. New Jersey, in 1846, made nonresidents punishable by a fine of $15 and forfeiture of their guns to the informer for trespassing with a gun, while residents guilty of the same offense were liable merely to a fine of $5 and costs, or less than a third of the penalty imposed on nonresidents. In 1854, North Carolina passed the bill preventing nonresidents from hunting wild fowl in Currituck county, the preamble of which reads as follows:

"Whereas, large numbers of wild fowl collect during the fall and winter, in the waters of Currituck county, which are a source of great profit to the inhabitants thereof; and whereas, persons from other States, not residents of this State, shoot and kill, decoy and frighten the same, to the great annoyance and detriment of the citizens of our own State: Now Be it enacted, etc."

Under this law all persons who did not reside in the State for at least one year were prohibited from hunting or killing wild fowl in the waters of the county above mentioned. Quite recently in North Carolina and Virginia nonresidents hunting wild fowl in certain counties were prohibited from shooting from sink boxes or boats, in order that this privilege might be reserved for residents alone.

In 1858 Georgia passed an act preventing nonresidents from hunting or fishing within the limits of that State, in order, as stated, to prevent strangers and others from holding conversation with slaves.

Delaware in 1863, following the example of Virginia, made it a misdemeanor for the nonresident to kill wild ducks, geese, or other water-fowl on any of the marshes or waters of that State, the penalty for so doing being fixed at $50 to $100. In 1866, Florida got busy and prohibited nonresidents from camping or fire hunting, with or without dogs or guns, in the counties of Taylor and LaFayette. In 1880 we are told that Maryland prohibited nonresidents of the five counties bordering the Patuxent from shooting snipe, rail, and wild fowl on the waters and marshes of the river, and also tabooed the use of sink boxes in Queen Anne county by others than residents of the county. Later laws in the different States went further, but space does not permit the enumeration here of any more instances of discrimination against the unhappy nonresident. Sportsmen of today, even, get a taste of it when they go to some distant game field, and so they will know how to sympathize to some extent with their less fortunate Colonial fathers.

Mr. T. S. Palmer, who has studied this subject exhaustively for the U. S. Government, and to whom I am indebted for this data on the history of hunting licenses, tells us that the local license had its rise in the Eastern States, the first law containing a nonresident-license provision being apparently that passed in 1873 in New Jersey, under the title, "An act to incorporate the West Jersey Game Protective Association." Section 7 of this act of incorporation lasting for fifteen years reads as follows:

"That if any person or persons nonresidents of this State, shall kill, destroy, hunt, or take any doe, buck, fawn, partridge, moor fowl, grouse, quail, or woodcock, at any time within the counties of Camden, Gloucester, Atlantic, Salem, Cumberland and Cape May in this state without com-

plying with the bylaws of this Game Protective Society then the person or persons so offending shall forfeit and pay the sum of $50 each, for each and every offense...provided nothing in this Act shall prevent residents of this state from taking game or fish, subject to the existing laws of this state."

The membership fee being $5 for the first year and $2 for every year thereafter, and nonresidents being required to procure membership certificates before hunting in the six counties above named. These certificates became in effect nonresident hunting licenses. In 1878 a broader and general act was passed, applying to other associations of that State. Other States later adopted the same plan, and thus the hunting license that we have today, though changed from time to time, came into being.

The second phase of licensing the hunter is called the enactment of market-hunting licenses, the effect in some of the southern States being to restrict market hunting and to prevent export of game from the State for commercial purposes, which brought about this legislation. This is the blow that was needed to control the unlawful activities of the market-hunter, what is now called in outdoor parlance, "the pot-hunter". Much good legislation has been enacted with a view to counteracting his evil practices, but he is still very much at liberty in not a few localities, no doubt.

The resident hunting license had its origination in the system of special licenses as developed in some of the counties of Maryland in the early seventies and eighties. Shooting wild fowl from sink boxes, sneak boats, or in some cases from blinds was prohibited except under license, and these licenses, the record says, were issued only to residents. Hence they constitute the beginning of the resident hunting license. The first of these laws was passed in 1872 for the protection of wild fowl on the Susquehanna Flats, at the head of Chesapeake Bay. Section 7 of the act provides:

"No owner, master, hirer, borrower, employee of any

owner, or other person, shall use or employ any sink box, or sneak boat of any description whatever, for the purpose of shooting at wild water-fowl therefrom, northward of the line named and described in section 380. . . without first obtaining a license to so use and employ the same as is hereinafter provided."

The license fee for a sink box was $20, and for a sneak boat $5. Section 11 of the same act requires that they make oath that they are bona fide residents of the State, and a fine of $50 to $100 was provided for violating any of the license provisions, one-half of which was to be paid to the informer and one-half to the school commissioners of the county.

In 1876, the use of sink boxes in the waters of Anne Arundel county with certain exceptions, or on Chesapeake Bay within the limits of the county, was restricted to licensed residents of the county, these costing $30 each. In 1882 licenses at $2 each (and a clerk's fee of 50 cents) were required for the use of "booby or bush" blinds on the Magothy, Severn, and South rivers. It is noticed, however, that the issue of licenses for blinds was not restricted to residents, and that the owner could extend to any person the privilege of shooting from his blind during the open season.

In 1878 residents of Cecil county were required to get licenses, costing $10, to use sink boxes on the waters of the Elk and Bohemia rivers; and in 1880 similar $10 licenses had to be obtained in Queen Anne county, and in Cecil and Kent counties for the use of sink boxes on the Sassafras river.

In Canada, a special $5 license came into use in the Province of Quebec in 1887. This license was different from ordinary licenses in being issued only for killing five deer and five caribou in excess of the limit prescribed by law. The system of general resident licenses apparently originated in Michigan in 1895 as a measure to restrict the slaughter of deer, but was being advocated in Illinois at about the same time.

THE LAW-BREAKER:

All sportsmen realize the great benefits that accrue to them in those states where game and fish laws have been properly enforced, because all true sportsmen believe in the principle of conservation of the natural resources of the country.

The various states having game and fish commissions appreciate the kindly interest shown by the advocates of conservation, I am sure, and it is (or should be) the aim of the State Commission to render direct and personal service to every hunter, every farmer, every angler, every lover of wild life, and to inform the public of the work they intend to do for the common good.

Sometimes the charge is made that the Game and Fish Laws were designed for a few city sportsmen. It is admitted that about 90 per centum of the hunters' licenses are issued to persons living within corporate limits of cities and towns (in States where a landowner is permitted to hunt on his own land in season without license), and improved conditions will add much to his pleasure, but the real benefit is to the landowner in the protection he is getting because of fewer numbers of trespassers and gangs of irresponsible and careless persons that formerly trailed across his farm in season and out. Under old conditions in most States, to protect his property, it was necessary to personally swear out a warrant and prosecute for trespass; now he has the added service of a Game Warden in all, or nearly all States who when the offender is hunting without license or out of season, will relieve him of a disagreeable job, and prosecute offenders in the name of the State, which is one good and sufficient reason for the maintenance of a State Fish and Game Commission and Game Warden in every State in the Union.

The sport of pursuing game and fish is delightful, every sportsman knows, but if this pleasure was eliminated, the economic value of our game and fish alone, makes it

worth our while to surround them with every law and safeguard necessary for their protection and conservation. In order to protect them, effective laws not only must be enacted, but ENFORCED with fairness to all and injustice to none. If this is not done promptly our remaining fish and game stands face to face with utter extermination; our game birds may suffer the same fate of the Carrier Pigeon and the historic Auk.

It is the aim of the several States, or should be, to endeavor to increase the supply of game and fish for the benefit and enjoyment of our home people who can not take long and expensive journeys to distant game fields where they are abundant. If all the people who hunt will take out their license, this would give each State sufficient funds to look after the protection and conservation of the game and fish in a businesslike way.

Every sportsman will agree that the man who hunts without his license, or who hunts out of season, is a cheater and is robbing you—each brother— who are complying with the law; he should be made to obey the mandates of the law. Statistics show that when the law is known 85 per centum of the people obey it; of the other 15 per centum, 10 per centum will behave themselves when once corrected; the other 5 per centum must be continually watched and made to realize that the strong hand of the law will punish them whenever possible.

It is recognized by State officials that before any law can be properly enforced it is necessary to have public opinion in favor of such enforcement, and they ask for your assistance in placing clearly before the public the justice and reason for enforcing the Game and Fish Laws. They need your co-operation and the value of your influence.

These facts are put before the angling and hunting fraternity in the hope that they will call your attention to the fact that co-operation is a necessity, and will work to your own individual advancement.

Help your State to prove to the people the value and economic reason for strict enforcement of the law. The great majority of these laws are just and reasonable, and much more liberal than is really consistent with absolutely effective conservation of our swiftly diminishing wild life. Help them to get the facts before the people; uphold the law in your own community; be a good example to your fellowman in abiding by the law yourself, and be jealous of its violation by others.

It is easy to criticize, and hard to perform. Give the designated authorities your kindly assistance in return for the great good they are rendering the cause you, as well as they, have deeply at heart.

One farmer, who was either aiming to be exceedingly generous or else very sarcastic, posted a notice on his farm which reads as follows:

"Hunters, Take Notice: Hunt all you durn please and when you hear the horn blow, come to the house for dinner. If you accidentally kill a cow, skin her and hang the hide in the barn. If the quail are scarce, kill a chicken or two, and if you can't get any squirrels kill a hog."

Game Refuges and Live Stock:

Forest Examiner Ward Sheppard, of Bernalillo County, New Mexico, writing in the Breeders' Gazette, has this to say on the subject—a subject of most timely interest to the sportsman:

"A step of great importance to the conservation of the remnant of wild game in the western United States was taken at the late meetings of the two national live stock associations at Salt Lake City. Resolutions were passed expressing the interest of the stockmen in this problem, and urging upon the Government the creation of Federal game refuges within the National Forests. A great body of practical men who, through intimate contact with the question know the present status and future value of our game ani-

mals, have committed themselves to the game refuge idea as the means of saving from extinction the beasts and birds that have formed so picturesque an element of western American life.

"Admitting the principle of game refuges—a step that gives hope to every game conservationist—the stockmen have qualified their endorsement with a restriction which, if put into effect, would place enormous difficulties in the way of reaping the fruits of this rational method of game conservation and propagation. They wish to have these refuges restricted to areas where the grazing of live stock will not be interfered with in any way. Presumably this means areas unsuitable for the grazing of cattle or sheep. Briefly, the Federal game refuge plan provides for the setting aside, through Act of Congress and Presidential proclamation, of certain areas of National Forest land whereon hunting would be forbidden. These areas, so far from being co-extensive with the National Forests, would be comparatively small, but in sufficient numbers to form reservoirs of game animals which could breed in safety from molestation, and which would overflow into the surrounding country. The principle is analogous to the principle in forestry, of saving seed-trees from the axe to assure a future crop of trees, or to the principle in stockraising of preserving an unimpaired breeding stock.

"The stock associations apparently desire to have these breeding grounds restricted to regions which, by the roughness of their topography or the nature of their vegetation or from other causes, are unsuitable to the grazing of range stock. This restriction is apparently based upon the mistaken assumption that stock grazing will be excluded from the refuges, as in Yellowstone Park grazing is not allowed. This assumption is erroneous. There is no intention, in any responsible quarter, of making such an exclusion. The game refuge plan will permit a relatively small number of game animals—particularly deer—to live unharmed either on waste land or on ranges chiefly devoted to stock grazing.

That wild game will flourish where domestic stock can not earn a living is well known to anyone conversant with wild life. Nevertheless, the restriction suggested would, if adopted, seriously interfere with the game refuge plan; and there are other remedies which would fully protect the interests of stockmen.

"The areas of western mountain range unsuitable to the grazing of domestic stock are comparatively small and scattered. The term 'unsuitable' is in itself a relative one. Suitability is largely controlled by the factors of accessibility, water and type of vegetation; and the first two factors are frequently subject to human control. Areas which are unsuitable for stock, owing to difficulty of access and lack of water, and which may nevertheless be adaptable to the propagation of wild game, are frequently made accessible by trails and bridges and usable through the development of watering places.

"It is safe to say that most wild animals do not inhabit the most rugged and inaccessible regions through choice, but from necessity. They are driven thither by their enemies—above all, by their arch-enemy man. Elk and deer once were abundant in the plains and foothill region east of the Rockies. Rough topography is unquestionably a strong factor in the protection of game animals from extinction; but the very things which render it unfavorable for stockraising—lack of water, lack of feed, difficulty of travel—likewise render it unfavorable for the propagation of game, though less so than in case of domestic animals. It then follows that if the question at issue is the preservation of a breeding stock of game, and the propagation of a supply for hunting, favorable conditions must be afforded for these purposes. If the stockmen are really concerned about game conservation they must apply to game breeding the same line of reasoning they apply to stock breeding, allowing of course for the difference in habits between the two classes of animals. They must recognize the necessity of providing the three essentials of feed, water and practicable

country. Recognizing this necessity, they will then realize that they have several forms of protection against any undue competition for range by wild game. The most important of these safeguards are (1) difference in habits between wild and domestic animals, (2) limitation in size of refuges, (3) control of refuges through flexible administrative regulations analogous to the grazing regulations of the United States Forest Service, (4) control of amount of game through the hunting of the surplus stock.

"It is well known that such animals as deer and mountain sheep can do well where domestic stock can not. Of the western game animals it can safely be asserted that the wild sheep and the Rocky Mountain goat will never compete with live stock, since, by preference, they inhabit the most inhospitable fastnesses. The elk, it must be admitted, does compete with live stock; but the elk will never come back. In the case of the deer, we are concerned with a browsing animal which will never offer any serious competition with domestic herds. No one can point out an authentic instance of deer hampering the live stock industry, and there are no conditions in the West under which they can conceivably do so. As for turkey and other game birds, the question of competition does not enter at all; they are an invaluable by-product which in no wise interferes with stockraising. The difference in habits must be taken full advantage of, and game refuges should where possible be limited to the areas that are least suitable for stock grazing.

"A cardinal factor of a successful game refuge policy, however, lies in geographical location. The refuges must be in sufficient numbers and so situated as to assure a supply of game in every region where it is desirable. There may or may not be waste range unsuitable for stockraising. Where there is no waste range this fact should not bar the creation of a needed refuge, for the refuge will not exclude stock grazing or interfere with it. In some cases the refuges will embrace lands both suitable and unsuitable for domestic animals, but in any event, with the single exception of the

elk, the competition between game and live stock will be negligible; and so far as the elk is concerned there is little probability that any attempt will be made to bring him back in large numbers on the National Forests. Like the buffalo, he was doomed to go as a free-ranging game animal, and henceforth he will necessarily be localized.

"Another important safeguard to stockraising interests lies in the limited size of the proposed refuges. None of the proponents of refuges expects or desires the creation of game preserves coextensive with the National Forests. Even if any did so desire, they would be faced by insurmountable obstables. The locking up of resources is alien to the spirit of the Forest Service; all it insists upon is the prudent use and protection which will assure a permanent supply of these resources. The locking up of game resources in particular is foreign to the democratic ideal of American sportsmanship, which would never tolerate anything that remotely approached the European system of special privileges in the chase. What is desired is a comparatively large number of small refugees which would have to be located geographically as to assure an overflow of game to the surrounding regions adapted to it, in sufficient numbers to satisfy the legitimate demands of sportsmen. In the location of these refuges there is no reason why the stockmen should not have an important influence.

"Game refuges within the National Forests would be under the administrative jurisdiction of the Secretary of Agriculture, as are the forests themselves. The National Forests were and are created under a general enabling statute by Congress, which authorizes the Secretary of Agriculture to promulgate rules and regulations for their governance. These regulations have the force of law. Administrative regulations of this kind are the most flexible system of laws yet devised. Everyone is acquainted with the enormous difficulty of changing statutory laws; it is much easier to secure changes in administrative regulations. Here then is a safeguard whose value can not be overesti-

mated. The stockmen, being fundamentally interested in game, can, through their local and national advisory boards, secure the protection of their vital interests in helping to shape the whole policy of game refuges.

"The interest of stockgrowers in wild game is not a mere sentimental one. There is a privately-owned fenced range in New Mexico containing one of the largest herds of antelope remaining in the Southwest. They are carefully protected, and their presence on that range adds materially to the selling price of the outfit. Sportsmen and stockmen have at least one vital interest in common: the extermination of predatory animals, which prey indiscriminately on wild game and domestic stock. In New Mexico the State game protective association, with a membership of 1,200 sportsmen, is actively engaged in the campaign against predatory animals. Wherever there is any game sportsmen and stockmen will unite in a relentless warfare against these enemies of valuable animals. The exclusion of hunting from certain areas of range will in itself be a benefit to stock interests.

"Game conservationists do not wish or expect to have the National Forests overrun with great herds of wild game. They do wish and hope to assure its preservation and to give a reasonable amount of wholesome sport to the average American citizen. Any surplus of game animals is easily removable. The killing of game can be regulated on a volume basis, as the amount of stock on a given range is now regulated on a volume basis. There will always be a hundred guns to every deer; if a surplus of game on game refuges should ever menace the live stock industry (a menace now inconceivable) the remedy would lie in permitting the surplus to be killed.

"Any man interested in the preservation of the magnificent game animals of our western mountains will admit that the present protective system is a failure. The game is going. Much of it is near the vanishing point. Long-closed seasons are difficult to obtain, and are far less de-

sirable from the stockman's viewpoint than game refuges, for the reason that they are inflexible. The game refuge is the last hope. Unless it comes, America will be a gameless continent. What rider of the range is willing, for the sake of a paltry mouthful of browse, to forego the thrill of seeing the supple form of a white-tail buck vanish into the fringing timber of a mountain park? What man 'blooded to the open and the sky,' wishes to see the far-flung, ample mountain ranges of the West stripped of every vestige of animal life that can not be converted into dollars and cents? The sportsman of the West calls upon the stockgrowers of the West to dismiss imaginary fears, and to say the word that will give impetus to the one remaining chance of preserving from annihilation the wild life of western America."

The foregoing presents the case fairly and accurately. The stockgrowers, the farmers, of this great country have it in their own hands to materially aid in conserving the fast fading game supply. I considered this such an excellent exposition of the basic facts in the case that I desired to have every reader of this book study it, hence its incorporation herein. It is high time the farmers and the sportsmen got together and worked together for the common good.

Things To Remember:

The sportsman in the field or mountains without matches can start his campfire by the aid of his shotgun. It has been successfully experimented upon and is both simple and feasible. First, make preparations to start your fire from the flame by building up your wood ready to light, standing kindlings up on end against the larger sticks wigwam fashion, leaving an opening at the bottom for the tinder, shredded bark, dry pine slivers or any dry splinter pounded between two rocks, any of which make good tinder. After removing the shot from the cartridge, sprinkle the most of the powder on the tinder, leaving only a few grains in the shell.

NOTE:—We are indebted to the Sportsman's Review for "Things to Remember."

Then tear a bit of dry cotton cloth with fluffy edges (a bit of lining from your clothes if nothing else is available), fill this loosely into your emptied cartridge. Put the shell into your gun and fire straight into the air. The cloth will drop close to you and either be aflame, or at least smouldering, so that you can easily blow it into a blaze. Drop this quickly into your tinder and your fire is made.

Accidents from the handling of firearms, much are they to be regretted, are bound to occur so long as there remain so many careless handlers of the gun. If you have a boy, make him a present of a gun early in life, but instruct him carefully how to handle it, and he will have no trouble all through life. It's just a matter of getting started out right. One of the highest accomplishments of a man's life is to know how to shoot well, and this is another argument to begin early.

The California Fish and Game Commission tells what to do with a deer:

To transport a deer on a saddle horse throw a rope across the saddle, pulling a loop of it forward through each cinch ring.

Place the buck across the saddle and put the head through one loop and the haunches through the other.

Draw the ends of the rope tight, make a loop in one, reeve the other through it and make fast.

To skin a deer head for mounting, cut the skin around the neck well down on the shoulder and breast.

Then cut along the upper side of the neck to the top of the head. Thence make diagonal cuts, one to each horn.

Cut off the ears close to the skull, turn them inside out, and cut away the meat, leaving the cartilage. Skin carefully around the eyes. Cut the lips close to the skull, leaving them attached to the skin. Split them from the inside and fill the cut with salt.

Rub plenty of salt into the flesh-side of all parts of the skin and let it dry slowly in the shade or roll it up hair side in and ship at once to a taxidermist.

To butcher a deer, hang it up by the hind legs, slit the skin along the middle breast and belly and to the end of the tail; then along the inside of each leg.

Cut off the feet at the joints and peel off the skin. Cut through the wall of the abdomen without piercing the intestines; loosen the diaphragm at the back and sides; cut away the lower intestine close to the bone and empty out the entire contents of the carcass. Split the breastbone with a hatchet.

The best cuts of venison are the saddle and haunch.

To make jerked venison or "jerky" use lean meat cut into strips about one-half inch wide. Lay these side by side on a frame made of slats or poles supported about four feet from the ground and keep a small smoky fire going underneath until the meat is thoroughly dry.

Fresh meat should be hung up and protected from flies by cheesecloth.

America for the first time in history now leads the world in all breeds of dogs. This was brought about by the world war, during which most of the famous kennels of Europe were practically wiped out and the cream of breeds scattered broadcast. As a result lovers of the different breeds are expected to come to this country in quest of the fine blood which is concentrated here. The Shepherds (formerly the German Sheepdog), Belgians, Airedales, Fox Terriers and Brussels Griffons are almost a rarity abroad now. At the beginning of hostilities entire kennels of these war dogs were turned over to the various governments, and few are left to be returned to their former owners. Many of them were killed in action and others died from various causes in the trenches. They did yeoman work for humanity. Hundreds of fanciers will now endeavor to replenish their kennels and America is the only country which will be able to help carry out their plans. A golden opportunity now presents itself to the American dog fanciers.

Carefully extinguish your camp-fire when leaving. To

show you how disastrous forest fires have become in late years, the President in 1918 had to authorize a loan of one million dollars to the Forest Service for fire-fighting expenses, to meet the serious emergency conditions in the National Forests of the Northwest and the Pacific Coast States. The loan was made from the special defense fund of fifty million dollars placed at the disposal of the President by Congress. While only a small percentage of blame can be placed at the door of the outer, it behooves each sportsman to carefully extinguish camp-fires. If we would guard the wild life that remains, we should use every means to prevent forest fires at our disposal.

The hunter has indeed arrived! Each returned soldier is intensely imbued with the spirit of sportsmanship caused by living and camping out as did our primitive forebears, and the brotherhood of man is now more fully apparent than ever before.

Fox-hunters of the old school believe that a fat fox caught in the fall denotes a hard winter.

If all hunters would wear red coats when hunting, this would doubtless reduce the number of fatalities greatly from accidental shooting.

The United States Department of Agriculture suggests the following ways of more largely utilizing the deer kill:

"Do not kill a spike buck or doe when you can obtain a full-grown buck.

"Do not kill a deer when weather conditions or difficulties of transportation prevent saving the meat.

"Save every pound of meat.

"Save the skin and the head also if the antlers are in good condition.

"Do not shoot deer at night, or in the water, or unless you can clearly see the animal aimed at is a full-grown buck. Failure to observe this rule usually results in a violation of the game laws, and often in the loss of human life."

To Soften Boots and Shoes:

Kerosene is good to soften boots or shoes that have been hardened by water.

To Destroy Cockroaches:

Sprinkle hellebore on the camp floor at night. The cockroaches will eat it and get poisoned.

To Preserve Soap:

Cut the bars of soap into small pieces, which will become hard and last longer. This is the economical way.

To Prevent Lamp Wicks From Smoking.

Soak the wicks in vinegar, after which dry them thoroughly.

Insect Stings and Bites:

Hartshorn should be applied to the affected part. This will stop the pain and prevent further swelling. Oil of sassafras is also good, especially for bee stings.

To keep matches dry, cork them in a tight bottle.

You can easily catch frogs with a hook and line baited with a bit of red flannel, which is also a good lure for fish in certain waters at given times.

Take one part rosin, two parts beeswax, three parts tallow, if you want a good waterproof oil for boots and shoes.

It is generally understood among hunters that a distress signal consists of three shots in rapid succession, followed a moment later by another shot.

What to do when you get lost: Don't lose your head, but sit right down and think. Don't wander on and on, thinking you'll eventually find your way out; usually you won't; you'll only get farther off the track. Camp right where you are until aid can reach you, or you can take time to study out where you are and how to get back where you started from.

Use This Match-Box to Light Your Cigar in the Strongest Wind:

Now comes an invention, patented by George Frank Waugh, a private in the U. S. Army, which seems to solve the difficulty of lighting a match in the wind. It is contained in Popular Science Monthly, as follows: The device is simple. A small, round hole is made near one end of the cover of an ordinary match-box. Some abrasive material is pasted on the corresponding end of the tray itself. In order to light your cigar, slide open the cover of the box until the hole is free, insert your match in the hole and strike it on the abrasive material on the end of the box. The released end of the cover provides a small walled-in space, in the shelter of which the cigar can be quickly and conveniently lit.

Sure you must carry your hunting license with you, as this has been the law for years. If it was not there you might go back home and get a permit after the warden had caught you. Practice safety first by always toting your license along.

The wife of a Methodist minister in West Virginia has been married three times. Her maiden name was Partridge, her first husband was named Robins, her second Sparrow, the present Quale. There are now two young robins, one sparrow and three little quales in the family.

One grandfather was a Swan and another a Jay, but he's dead now and a bird of Paradise. They live on Hawk ave., Eagleville, Canary Island, and we'll bet the fellow we borrowed this item from is a Lyre and a relative of the family.

Backwoods Lights:

During the "lightless nights" enforced during the late war, even city folks learned to use backwoods lights, such as blazing tallow dips, fir cones and pine knots. All these appeared in the city of Philadelphia during the war.

In the Bustleton district, on the small truck farms, blazing pine knots took the place of coal oil, being used for outdoor purposes also. Fastened to the tops of posts, first made fireproof by being covered with turf, they blazed away, throwing out a brilliant light (if a bit fitful), and filling the air with the fragrance of burning pitch.

Incidentally, it was discovered that the smoke and fumes of the blazing knots proved an effective mosquito exterminator. At least, where they were used to any extent few mosquitoes lingered 'round to torment one in the early evening, it was found.

In the same section of Pennsylvania pine or fir cones, first dipped in a solution made by putting fats in coal oil and turpentine, were also found good for outdoor illumination. Those who have tried both say that the cone does not last as long, although, while burning, it produces a brighter and steadier light.

Quite a novel use is being made of pine knot illumination by canoeists, and this is an item that may interest the prospective outer, who does not care to burden himself down with lanterns, or other lighting apparatus.

Putting Away The Tackle:

When the season for fishing is over, anglers who possess first-class tackle will be ready to store it away for the winter. The artificial flies will be gone over carefully one by one, the fly-book sterilized and when the flies are placed therein sprinkled with camphor to keep out moths and silver fish. All snooked hooks will be inspected, placed in packages, and laid with tested leaders in the tackle-box. The lines will be carefully gone over, dried, perhaps oiled, and rewound carefully on the reels. The rods also will be given attention and either sent to the tackle store to be overhauled, straightened, rewrapped and reshellaced, or this will be done at home during the winter months.

How to Repair Shot Chargers:

In the repairing of shot chargers of a gun, the usual method is to remove the lever and put the stud back in place. Wet the joint inside the charger with soldering acid. After holding it with the stud downwards, apply a bit of soft solder upon the joint, holding it until it melts over an alcohol lamp. In case the lever spring slips out, take any kind of cartridge primer which has had the priming removed and put inside it a drop of soldering acid with a bit of solder. After warming it up till the solder fuses, and after it has cooled the charger should be wet with a bit of the acid where the spring's bend comes, placing the primer with the solder directly in contact with the wet place. After holding over the lamp until the solder is melted, replace the spring.

Keep Within The Law:

When the sportsman goes hunting, he goes with the intention of keeping within the law. He buys a license. He knows the money realized from the sale of these licenses is used by his State Game and Fish Department to protect game and fish. He understands that this protection is his benefit, as it increases the amount of game and fish in his State.

Another law the true sportsman always obeys when out hunting is the "bag limit." By carefully complying with this law he knows he is co-operating with the designated authorities to increase the game and fish.

The Case Against The Crow:

The crow is generally known to be one of the greatest destroyers of bird life on the American continent. It is an arch-enemy of game birds and crops. The Pennsylvania Game Commission has estimated that each crow destroys more wild life annually than any fox, weasel, wildcat, mink or human hunter.

During the first several weeks of their life, the young of game birds and of perching birds are fed on animal food, chiefly in the form of insects, and each will consume daily an amount equal to its own weight.

A young crow while on the nest will consume an amount of food equal to three or four times its own weight, and only a small part of this food consists of insects. Most of it is made up of eggs or the young of other birds which, if left alive, would be of benefit in the protection of crops.

In addition to the harm done in destroying useful birds, crows spread contagious and infective disease.

Crow shooting forms a fascinating and useful sport, and is one we can engage in without the danger of being called a "game hog," for the more of them we kill, the greater our service to other game life.

What can be accomplished when the sport is properly organized is illustrated by the activities of the "Crow Shooters and Would-be Crow Shooters" of Canton, South Dakota. Each year they hold a crow hunt. In the last two hunts a total of 158 shooters participated and a total of 516 crows were killed.

The Flight of Game Birds:

While there is a good deal of variation in the speed of flight of game birds, the table given below may be taken as a most accurate approximation of the comparative speed at which the better known wild birds fly.

The crow may be taken as an example of the slower flying birds, which travel at a rate of 35 to 55 feet per second, with an average speed of 45 miles per hour, while many species of hawks attain a remarkable speed, some going as fast as 200 feet a second.

The table follows:

Bird.	Feet per second.	Average.
Quail	65 to 85	75
Ruffed Grouse	60 to 90	75
Snipe	50 to 70	65
Wood Duck	70 to 90	80
Canada Geese	100 to 120	110
Red Head	110 to 130	120
Canvas-back	130 to 160	145
Mallard	55 to 90	75
Teal	120 to 140	130

It may be said that if ducks are frightened they can reach maximum speed at will, and this sprinting flight is usually what the gunner has to make allowance for. On the other hand, many wildfowl are jumped and killed while hovering over decoys and moving slowly, and birds like snipe and quail are often killed before they have attained full speed. Upland birds are not often shot while passing the gun at right angles, but going straight away, quartering or twisting.

Pigmy People Lazy, But Great Hunters:

High up on the slopes of Mount Mariveles, in the Philippine Islands, dwell the last remnants of an ancient and mysterious race—the negritos, or "little negroes."

Scientists differ hopelessly as to their origin and history, but the visitor who is fortunate enough to penetrate into their carefully hidden villages finds the quaint little people extremely interesting.

Tho' they are disinclined to work, the negrito is indefatigable in the chase, and will hunt all day without anything to eat but the mango, or banana, that he may seize as he rushes by. If the dogs are scarce for any reason, women

are pressed into service, and these go loping through the brush, yelping in imitation of the canines for whom they are substituted.

Sometimes a beater will emerge from the brush carrying a pig he has encountered and killed or, more important still, bringing news of the sighting of a python. In such a case the whole hunt is called in and its energies directed to the capture of the big snake, which, when killed, is carried in triumphal procession to the village, where it furnishes a feast for all who can be gathered for the festive occasion.

The Calling of Ducks:

No matter whether one shoots ducks over decoys, on the pass, jumping or wading, the call is very essential. Yet of the great number of men who shoot, comparatively few are able to call well or with judgment. Nor is it necessary to cultivate many different calls. Two or three are quite enough.

For the inland water-fowl, mallard, widgeon, teal, gray-duck, spoon-bill, wood-duck, black-duck and all non-diving ducks, the mallard and teal call is sufficient. In fact, the mallard call alone is usually enough for the attraction of all non-diving ducks.

For diving or deep-water ducks, the blue-bill call will answer, although if one has also at command the purring call of the redhead, it will greatly help in the day's sport. In shooting over ordinary waters where sport is to be had at redheads, blue-bills, broad-bills, whistlers, butter-balls and others of this class, most of the ducks will respond readily to the blue-bill or the broad-bill call. Blue-bills are great callers, and on calm days can be heard hailing every passing flock. Sometimes the blue-bill calls the ker-r-r once, then twice and three times, and occasionally even four times. When they are feeding they often sound a contented kind of chuckle which is similar to that of the mud-hen when undisturbed.

Sound travels a long way in a still marsh. When the call is loud the mallard, black-duck and widgeon detect easily the fraud in calls; therefore, it is well to modulate the voice in a marsh. Ofttimes these wary birds, after coming into a marsh in response to your call, will settle among your decoys; or they might alight outside of gun-range and study the decoys to satisfy themselves of their being all right. If not disturbed they will then slowly move toward the decoys, feeding and chuckling as they swim.

Do not call too loud or too often.

Call to attract the bird's attention to decoys, then modulate your call. In a marsh remember the birds can detect the imitation much more readily in a loud than in a muffled voice.

For deep-water birds call louder, or else give a low chuckle that they can just hear.

If birds start to circle away, a few low calls will often bring them back.

When in open water, the birds will often go entirely around you to discover what the suspicious bunch of weeds contains, and at such a time lie low and do not try to keep them in sight all the while. Your moving will scare them away quicker than anything else. Lie low, and stay low, and if the birds come in do not jump up if you happen to be on shore. Rest just high enough to clear your blind when you shoot. Be assured the ducks' eyes are on the shore side, for there is where they watch for danger, and any movement sends them scattering.

Are Fish Color-Blind?

Ever and anon this question bobs up somewhere in print. It is, has been, and apparently always will be, a much mooted question for a lot of fellows who do not stop a moment and do a little common-sense thinking.

All anglers know that a trout will bite at a certain color fly at a certain season. No other color will appeal to the

trout during that period. To our mind this is all the proof required to convince even a candidate for the feeble-minded institute that a fish can and does distinguish between colors.

Have Fishes Memory?

Experts in fish culture and piscatorial experiments are convinced that at least some of the fishes of the sea are endowed with memory, as well as other brain faculties that are often surprising.

Capt. John Patton, former commander of a whaling vessel, upon his return from Alaska, is authority for the information that the most astonishing results have been obtained, especially as regards the gray perch, which lives principally on small silvery hued sardine.

He took some of these and colored them red, and they were then placed in the tank where the perch was, with several silvery sardines.

Of course, the normal sardines were at once seized and devoured, but it was not until hungry that the perch made a tentative meal of one of the red colored victims. On recognizing the sardine flavor, however, he promptly demolished the remainder.

Later the perch devoured the sardines irrespective of color, thus showing not only traces of a memory, but also the power to differentiate color.

Subsequently sardines colored red and blue were placed in the tank together with the silver ones. The same scene was repeated, the blue sardines not being attacked until the others were eaten and hunger compelled investigation of the newcomers.

Where Birds Are Actually Used as Lamps:

The price of coal-oil is not an item of interest to the inhabitants of the Island of St. Kilda, which is a favorite haunt of that animated oil-can, the fulmar. So rich is this sea bird in oil that the natives simply pass a wick through

its body and use it as a lamp. This oil is also one of the principal articles exported from the island. It is found in the birds' stomachs, is amber-colored, and has a peculiarly nauseous odor. The old birds are said to feed the young with it, and when they are caught or attacked they lighten themselves by disgorging it.

In St. Kilda it is legal to kill the fulmars only during one week of the year; but during that week from eighteen to twenty thousand birds are slaughtered.

The mutton-bird of the Antartic also carries its oil in the stomach and can eject this oil through the nostrils as a means of defense against enemies. Quantities of mutton-birds are slaughtered every year for their oil on the coasts of Tasmania and New Zealand. In its composition and properties this oil resembles very greatly the oil of the sperm-whale.

Tackle For Tarpon:

A tarpon pole should be about seven feet long and made of carefully selected pieces of bamboo, greenheart, or something similar. The guides should be very smooth and all precaution must be taken to prevent the wearing of the line. The reel must be carefully examined, and big enough to carry six hundred feet of line. A reel of inferior quality is apt to jam as soon as subjected to a great strain, and no one should ever try to economize in purchasing this part of the outfit. Hooks, too, must be of the best workmanship, as the mouth of the tarpon consists of almost solid bone, and it takes a good hook, indeed, to find lodgment in one's mouth and hold fast. For trolling, piano wire leaders are used, which seldom break under the heaviest strain, to which should be attached the best hooks you can buy. The leaders should be six feet in length.

Besides the nuts used in confectionery, the Indian cashew tree yields an insect-repelling gum, a juice that makes indelible ink and three kinds of oil, one edible, the others used to tan fishing nets and preserve wood.

In Tasmania all snakes are venomous, though only five are really deadly, and these are rarely encountered.

The Australian continent is abundantly supplied with lizards, there being three hundred and ninety species recorded, and they may be seen not only in woods and prairies and deserts, in the water, among rocks and in trees, but also in the less frequented city streets.

The smallest known bird is a Central American humming bird that is about the size of a bluebottle fly.

The bill pouch of the pelican will hold from three to eight pounds of fish.

Overcooked fish is dry and tasteless, while undercooked fish is not safe.

The deepest place in the ocean yet found is off Mindanao, Philippine Islands—32,088 feet.

The most primitive mammals, the monotremes, are confined to Australia. There is the platypus, a strange beast which lays eggs like a turtle, has horny pads for teeth and a bill like the duck; its front feet are webbed and both back and front feet have claws.

A good remedy for insect bites is to rub the skin with a little vinegar and water. Scented verbena leaves are said to have the same effect.

Don't kill snakes unless you know that they are poisonous. They keep down the rodents so injurious to agriculture.

Goat's milk is much purer than cow's milk because the goat is immune to most of the infectious diseases that the cow is subject to.

RECIPES FOR CAMP COOKING:

Venison:

The hunter should be familiar with the different parts of the deer and should know what each portion is best suited for. The shoulder is used for roasting. The fore-loin may be used for roasts and steaks; the haunch or loin for roasts

steaks, and stews. Cut the ribs close and use for soup. This part is also good smoked. The breast may be baked or stewed. The scrag or neck for soup. The ideal deer for meat is the flesh of a female about four years old. Buck venison is also excellent, but either male or female deer requires skill in dressing for preservation.

Broiled Venison Steak:

Venison steaks are best when broiled over a clear fire, and they should be turned often. When done, season with salt and pepper to taste, pour over two tablespoonfuls of currant jelly melted with butter, if handy, and serve hot. Excellent steaks may be cut from the loin.

Venison Hashed:

Cut into small pieces, or slices, and place the trimmings and bones in a saucepan with just sufficient water to cover them. Stew thus for one hour. Then strain the liquid into a stewpan, add some small pieces of butter, rolled in flour, and the gravy left from the venison from the previous meal. Add the meat, keeping it over the fire just a time sufficient to warm thoroughly, but not allowing it to come to a boil again.

Fried Venison Steak:

Cut a breast of venison into steaks. Take a fourth of a pound of butter and let it get hot in a pan. Rub the steaks with a mixture of a little salt and pepper; dip them in flour, or if this is not handy, rolled crackers or bread crumbs will do, and fry to a rich brown. Take the meat up. Place a heaping teaspoonful of flour in the butter in the pan and stir well until it browns, being careful not to burn it. Add a cup of boiling water with some currant jelly dissolved into it if obtainable. Stir a little while and then strain it over the meat and serve at once.

Rabbit Fricassee:

Brown some butter in a hot iron skillet. Then fry the hare, previously cut up, brown on both sides. Then cover the meat with hot water and stew until it is thoroughly tender, seasoning it to suit taste. When stewing is finished, let the meat again fry brown.

To Roast or Bake Geese or Ducks:

Wash in soda water, wipe dry. Stuff with a highly-seasoned dressing, using more onion than is commonly used for turkey or chicken, also a little sage. Dredge the fowl with salt, pepper and flour. Put a little water in the pan and baste often. Bake until tender, allowing twenty or twenty-five minutes to the pound. Serve with sauce.

To Broil Squabs, Pigeons, Partridges:

Here are two good ways, either of which may be used with success:

Wash in soda water, wipe dry and put in a baking pan heated very hot. Put the skin side down and press it flat on the back inside of a hot oven. Cook about fifteen minutes, turn the bird and cook until a nice brown. This usually requires thirty minutes. When done, season with salt and pepper and pour melted butter over it. Serve with pastry crullers. You can broil the bird on top of the stove on a hot griddle, or on a wire broiler over hot coals.

Another way: Split bird down the back. Sprinkle with pepper and salt, dredge with flour and put in a piece of breakfast bacon under each wing and leg. Put three or four pieces of bacon in the broiler, or in the pan, and lay bird on it. Broil in the oven or over coals. If in the oven, baste with drippings from the bacon, and if there is not enough, use a little butter and water mixed.

(Note: These are all tested recipes furnished by brother sportsmen.)

To Fry Fish, Game, Etc:

Clean well, season, drop in hot fat and fry brown. Be sure the fat is hot, as this sears the outside, or surface, and retains the juices and game flavor. If fried in cold fat, this fries all the juice out and flavor as well, and makes the meat tough. Salt the meat after it is placed in the pan, when almost done.

Camp Coffee:

To each cup of water put in one tablespoon of ground coffee, then add one for good measure. Put on in cold water and place on embers to boil. Just allow it to boil up once and remove pot from fire. Use just a little water, about one-fourth cup, to settle grounds, and serve steaming hot.

Camp Tea:

Allow one teaspoonful to each person, and one for good measure. Pour over fresh boiling water and set aside for few minutes to steep, then serve.

Fish:

To fry fish, dredge the pieces with flour or cornmeal, have ready hot lard or drippings sufficient to cover the pieces. When brown on one side, turn over in the fat and brown other, remove from frying pan, and serve with tomato sauce.

To Fry Pan Fish:

Select small fish. When they are fried quite brown ready to turn place cover over them, drain off fat, invert pan and they will be left unbroken on the plate. Put hot fat back in pan, place fish in pan as before and fry on other side. Drain and slip them on a warm platter and serve hot.

Fried Eels:

Clean eels well, cut in small pieces, wash and wipe them dry, roll in wheat flour, and fry as directed for fish, in hot

lard or other lard substitute. They should be cooked thoroughly done.

Fried Halibut:

Fry a few thin slices of salt pork in an iron frying pan; then take up but keep warm until the halibut is fried. Wash and dry the sliced halibut, season with salt and pepper, dredge with flour, and place the strips in the hot pork drippings and fry brown on both sides; then serve the fish and the pork together.

Fried Brook Trout:

Clean, wash and dry the fish, split them to the tail, season with salt and pepper, and roll in flour. Lard or the fat of fried salt pork may be used to fry them with. If lard is used, add a piece of butter to prevent sticking, and which also aids in browning them properly. Have your fat very hot; quick frying is essential. Serve hot. Usually fried with heads on.

Fried Smelts:

Fry with heads on, same as brook trout.

Fried Frogs:

This is the usual way to prepare frogs. The hind legs and quarters are all that is used. Clean well, season, and fry in egg-batter, or if eggs are not available fry them in fat.

Baked Pickerel:

Clean and wipe the fish carefully, place it in the pan with just sufficient hot water to prevent scorching. Bake slowly, basting frequently with butter and water. When done, stir in two large spoons of melted butter, and season to taste.

Fresh Salmon Fried:

The slices should be cut about three-fourths inch thick. Dredge with flour, or dip in egg and roll in cracker crumbs.

Fry until a light brown. This method will answer for all large fish that has to be cut into steaks. Season to taste with salt and pepper.

Boiled Bass:

Thoroughly clean and place in a pan with enough water to cover; add two tablespoonfuls of salt; place pan over fire and allow it to boil about five minutes. Test, and if found done, take up and serve with tomato or some other sauce easily carried to camp with you.

Boiled Fresh Cod:

Sew up the portion of fish to be cooked in a thin cloth, or if this is impracticable tie it up as best you can. Boil in salted water, allowing the water to be boiling when the fish is put in the pot; boil for about fifteen minutes to each pound. Unwrap and serve with any sauce you like or have with you.

Game Soup:

Take two grouse or two partridges; three medium-sized onions; one can of dried beef; some fried bread; pepper and salt and celery salt; three quarts of water.

Prepare and cut up the game, also cut the onions into small pieces, place in soup pot, add the beef, pour on the water, heat slowly and cook gently two hours.

Fry some bread in butter and serve with the soup.

If the grouse or partridge is not at hand, a couple of rabbits will make a good substitute.

Squirrel Soup:

Prepare the squirrel for soup; add one teaspoonful salt; one gallon water; cover the soup pot close, place on back of camp oven to boil gently; add corn and other vegetables if obtainable. When meat has boiled tender, strain soup; then return soup to oven and boil gently 15 minutes.

Thicken with flour and flavor with celery salt; serve with toasted bread.

Green Turtle Soup:

One turtle, seasoned with onions, juice of one lemon, four quarts of water.

After removing entrails, cut meat into small pieces, add water and stew slowly until meat is tender, then add onions, pepper and salt, stew very slowly and do not let it cease boiling during this time. Add additional water, if necessary; thicken with brown flour, simmer a few minutes longer. If there are eggs in the turtle cook separately, throw them in the soup when done before taking up soup.

Roast Goose:

A wild goose something less than one year old is best and the fatter the better. Stuff with bread crumbs and a goodly portion of butter, or salt pork if no butter is obtainable. Bake two hours or longer.

Roast Wild Duck:

It is better, if the weather is cold, to keep a wild duck a few days before cooking. Before roasting, they should be parboiled, which will remove the fishy taste, that most ducks have. Place an onion inside the boiling duck. Carrot is good if you prefer. Season to taste with salt and pepper. Roast young ducks from twenty-five to thirty minutes, grown ducks an hour or longer. Baste frequently.

Canvas-Back Duck:

This bird requires no seasoning, having a perfect flavor of its own. It feeds largely on wild celery, which accounts for its good flavor. Roast quickly over a hot fire. Dress the duck in the customary way by plucking, singeing, and drawing, then wipe with a wet towel or cloth, after which place in a pan, put in oven and roast, basting often. Roast for about thirty minutes. Most sportsmen prefer it a little rare. Serve hot.

Roast Pigeons:

Pigeons should be roasted same day killed, as they otherwise lose their flavor. They may be roasted in the usual manner. Generally it requires from twenty to thirty minutes' time.

Woodcock Roasted:

Pluck feathers, skin head and neck of bird, and when prepared place in pan, baste with butter, dredge with flour, and roast from fifteen to twenty minutes over a hot fire.

Roasted Snipe:

Prepare and roast same as woodcock, only not quite as long.

Reed Birds:

Prepare carefully, salt and dredge with flour, and roast over a quick fire about fifteen minutes. Serve on toast, and season to taste.

Roast Quail:

Steam them until they are quite tender, dredge with flour, and dip well in butter, season with pepper and salt and roast about fifteen minutes. Roast Partridge, Roast Pheasants, and Roast Grouse prepared same as Roast Quail.

Fried Rabbit:

Thoroughly clean, wash, and place in boiling water; allow it to boil ten minutes, then drain, and when cooled cut up, dip in egg and bread crumbs, season with salt and pepper, and fry in butter or lard. Fry to a rich brown on both sides. To make rabbit gravy, add a spoonful of flour and a cup of milk (canned if none other is obtainable), and allow to boil once.

Squirrel Fried:

Cook this same as you cook fried rabbit. They may be also broiled or stewed.

HINTS TO SPORTSMEN:

To Keep Meat Away From Flies:

Tie up in sacks of muslin, after previously wrapping in paper. Hang it up in a cool, dry place, out of reach of carniverous animals. The muslin allows the air to enter and it is really better not to use paper, if the sack can be padded with straw, or something, so that the flies cannot reach through.

To Rid the Camp of Insects and Vermin:

Take two pounds of alum and dissolve in three-fourths gallon of water. In order to thoroughly dissolve the alum allow it to stand over night. Apply with a brush, or rag, while boiling hot to cracks, holes, or wherever the insects and vermin are located. This is usually quite effective.

To Make Tough Meat Tender:

Tough meat may be made tender by laying it for a few moments in strong vinegar water.

To Keep Ants Away From the Sugar Box:

A heavy chalk mark laid all around the sugar box is said to be a safeguard against ants, as they will not cross the mark.

To Keep Out Mosquitoes:

Leave a bottle of the oil of pennyroyal uncorked in your tent, or camp hut, at night, which is effective in keeping out mosquitoes.

To Keep Knives From Rusting:

Steel knives not in constant use may be prevented from rusting if dipped in a strong solution of soda, made of one part water to four of soda. Then wipe dry, roll in flannel, and keep in a dry place.

Never Boil Tea:

It dissolves from the tea tannin, which is not beneficial to the digestion.

How to Make Tea:

Let the water boil hard. Take one teaspoonful of tea for each cup to be made, and add the boiling water. Let the water stand upon the tea leaves for five minutes, then serve. Tea should be made in an earthen pot, which has previously been warmed by having hot water put into it before the tea is made. If you do not prefer the tea rather strong, let it only steep three or four minutes.

How to Make Baking Powder Biscuits:

2 cups flour; 2 tablespoons lard;
1 teaspoon salt; 1 cup sweet milk;
2 teaspoons baking powder;
(Use water if you have no milk).

Sift flour into a pan and with a large spoon measure two cups, putting the flour into the cups gently, and not mashing it down. Put the flour that is measured back in the sifter and add to it two teaspoons of baking powder and one teaspoon of salt. Sift it all into the crock or a large bowl and add two tablespoons of lard. Rub the lard into the flour ("Crisco" is a good substitute if you have no lard). Rub lard into the flour, using tips of fingers, or a spoon, until this is well mixed. Add the cup of sweet milk (or water) slowly, working the dough all the time with the fingers or spoon until it is as soft as it can be handled. Take the dough out of the crock and place it on a board sprinkled with flour. Work it with the hand just a little, then roll it out with a rolling pin to about one inch thick. (The empty olive bottle makes an ideal rolling pin). Cut with a small biscuit cutter, which may be the baking powder can, and put in a shallow pan. Bake in a hot oven for about fifteen minutes until thoroughly done.

How to Make Soda Biscuits:

2 cups flour
½ teaspoon soda
1 teaspoon salt
1 cup buttermilk
2 tablespoons lard

Sift some flour into a pan, and with a large spoon measure two cups, putting the flour into cup gently, and not mashing down. Put the flour that is measured back into the sifter and add to it one teaspoon of salt and one-half teaspoon of soda. Rub the lard into the flour using tips of fingers, until it is mixed well. Add the cup of buttermilk slowly, working the dough all the time with the tips of the fingers, until it is soft as can be handled. Take the dough out of the crock and put on a board sprinkled with flour, working it with the hands or kneading it just a little, then roll it out with the rolling pin to about one inch thickness. Cut with a small biscuit cutter and put in a shallow pan. Bake in a hot oven for about fifteen minutes. (This recipe was taken from U. S. Extension Circular No. 35).

Magic Yeast Bread:

½ cake magic yeast
1 tea cup warm water
2 medium size potatoes
½ teaspoon sugar
¼ teaspoon salt

Thoroughly cook and mash very fine the two potatoes in water in which they were cooked, add salt and sugar, add flour enough to make thick batter, then dissolve yeast (½ cake in warm water) and place the bowl in which the batter is mixed in another bowl of warm water and let stand for ten to fifteen minutes; allow to rise, twenty-four hours being usually required in cold weather. (This recipe was taken from U. S. Extension Circular No. 35).

Dandelion or Beet Greens:

Remove the roots, pick over the leaves, throwing away all the wilted ones and wash several times to get clean.

Cook in boiling salted water, with not quite half as much water as greens. Cook one hour, drain, and add a little butter and salt. Eaten with hard boiled eggs and vinegar they are good. (This recipe was taken from U. S. Extension Circular No. 35).

Boiled Hominy:

Wash one cup of white hominy and after draining, place in a saucepan down in a big kettle over the fire. Add one teaspoonful salt and one quart boiling water. Keep it boiling till tender but do not boil hard. (U. S. Extension Circular No. 35).

Boiled Onions:

Peel off the entire outer skin. Put them in a saucepan and pour boiling water over them. Put as much as for boiling potatoes (enough to cover them) and let them boil until soft when stuck with a fork, which takes about one hour. Drain off the water and add a little salt and pepper and a very little butter. (U. S. Extension Circular No. 35).

Beans:

Wash the beans and cook in boiling water about an hour or an hour and a half, putting in a little salt the last half of the time they are on the stove. Have just enough water to keep them from sticking to the pan, but not enough to have to drain off the water, after they are cooked. Serve adding more salt if necessary. (U. S. Extension Circular No. 35).

How to Fry Ham:

Cut the slices about half an inch thick, or to suit your fancy. Cut off rind, and place in the frying pan which has been previously heated. (It should be an iron frying pan). Fry the ham from ten to fifteen minutes, according to heat of fire. Do not allow to become too done; it is better cooked well done, but what I mean is that the fat should not be allowed to fry all out. It is much better "juicy."

Bouillon Cubes:

Bouillon can be purchased anywhere in cubes, and this is a handy article of diet to have along, for nothing is more beneficial than a cup of steaming hot bouillon on a cold raw winter's day. The following varieties of canned soups are also recommended to the camper:

Vegetable soup, split pea soup, navy bean soup, mock turtle soup, black bean soup, cream of corn, beef bouillon, mulligatawny soup, beef soup, oxtail soup, tomato soup, tomato bouillon, tomato rice with curry, cream of tomato, consomme, beef stew, and chicken soup.

These soups are already prepared in cans, boiling water being all that it is necessary to add to complete them. Truly a nice innovation for the outdoorsman. They may be obtained at any grocery store.

The First Aid Kit:

Every camper should take with him on his trip a medical kit, containing such necessary drugs and medicines as thought necessary, as well as solutions with which to wash the throat and mouth, a disinfecting solution, etc., the contents of the kit having been recommended to you by your physician or druggist.

Cuts:

Any camper is liable to receive cuts, and something must be taken along as a first aid treatment. The following, taken from "Health and Sanitation," by Dr. W. L. Heizer, who is Executive Secretary of the Kentucky Board of Tuberculosis Commissioners, in collaboration with Mrs. V. O. Gilbert, is considered authoritative medical advice on the subjects "cuts," "punctures," "bruises," "bites of animals," "stings of insects," "foreign bodies in the eye," "snake bites," "breaks and dislocations of bones."

"This is one of the most common accidents to those who are careless in the handling of knives, etc. The cut may be

so serious as to require the attention of a physician. This will be indicated by a cut long enough to gape open, deep enough to cut a blood vessel, which would be indicated by a free flow of blood. If the cut is upon the face, the attention of the physician should at once be directed to it in order that an unbecoming scar may not result. If there is a continuous flow of blood in considerable quantities, either in a continual stream or in squirts, a tightly folded handkerchief pressed over the site of bleeding will usually stop the flow of blood in five minutes. If the flow of blood is continuous, in an even stream, the bleeding is mostly from a vein, and a handkerchief folded lengthwise and tied firmly around the bleeding member on the side of the wound farthest from the heart, will easily control the bleeding. If the bleeding comes in spurts, an artery has been cut and such a handkerchief should be tied around the member on the side nearest the heart. The handkerchief may be tied loosely, and then a small stick run through it and twisted or turned around until the handkerchief becomes tight enough to stop the flow of blood. A physician or surgeon should then be called to dress the wound properly and to prevent further bleeding.

"For small cuts, the treatment is very simple—clean water and a clean piece of cloth, or absorbent cotton, should be used to wash the dirt from around the wound. The operator's hand should be thoroughly cleaned before attempting this. A bit of absorbent cotton wrapped around a toothpick and dipped in tincture of iodine (which should be kept on hand for such purposes) should be thoroughly rubbed over the cut and into its depths. A small piece of clean gauze, or linen, a little longer than the cut and about half as wide as long may be placed across the cut. A strip of adhesive plaster, which should be kept (in camp) for such emergencies, might be placed across the cut over the gauze, care being used to pinch the edges of the cut together, and the adhesive plaster then placed so that the edges of the cut will not gape open, but be brought closely together, as they

ought to heal without a scar. Unless there is an accumulation of pus, or a free discharge, or an angry looking swelling shown by redness and inflammation and pain, this dressing ought to remain on three or four days until the cut is healed."

Punctures:

"This is a common condition, especially among children who go barefoot. The offending agent is usually a nail, and oftentimes it is about a barn-lot, which makes accidents more serious because of the danger of tetanus, or lockjaw, following. (Note: While this advice was written evidently for children, it is equally applicable in its essentials to the older ones, to the outdoorsman). Lockjaw germs, or seed, grow only in deep wounds to which the air cannot enter. For this reason it is necessary to give a special kind of treatment to these deep punctures, or penetrating wounds. It is probably best, when convenient, to go to a competent physician, who might find it necessary to enlarge the mouth of the wound. At any rate, such wounds should be thoroughly cleansed and disinfected. A simple method of doing this is by the use of a bit of absorbent cotton wrapped around the end of a toothpick, saturating it with pure tincture of iodine, and then inserting it boldly down to the very bottom of the wound and allowing it to remain there two or three minutes. It is better to repeat this in order that the iodine may be certain to reach the bottom of the wound. If the wound be very deep, and a physician cannot be secured, it is probably best to make a little wick of gauze or linen saturated with tincture of iodine, and after having used the iodine as above described, this wick should be left in the wound for a day or two and should reach about half way to the bottom of the wound."

Bruises:

"These may result in various ways, either by falls, or being struck with a club or some other blunt instrument, or

by the falling of objects upon one. There is sometimes considerable swelling and pain, and the bruised portion may turn dark. If severe, the child should be kept at rest, and cold or hot compresses may be used over the site of the bruise. This may be done by wringing out of as cold or as hot water as can be borne, folded bath towels or flannels, and having them placed for five or ten minutes over this bruise, and repeated often enough to relieve the pain. The hot and cold compresses can both be used alternately. If the skin is broken, the wound should be painted over thoroughly with tincture of iodine to kill any germs of blood poison."

Bites of Animals:

"This is a condition that is causing health officials a great deal of worry on account of the increasing number of cases of hydrophobia from the bite of 'mad dogs' or other animals. Many times the pet of the household has been found to become suddenly vicious and his manner changed; he has a disposition to run away from home, or by his actions, is shown to be peculiar. For this reason, the bite of an animal should be regarded with suspicion, and the dog, or whatever animal causes the wound, should be confined for two or three weeks, feeding and watering it carefully, in order to see whether or not it really had hydrophobia. If so, the victim should be given the Pasteur treatment immediately. This treatment is furnished free by the State Board of Health, and requires twenty-one days to administer. The only expense necessary is the payment of the patient's board while the treatment is being given (in most States). Under favorable conditions, the treatment may be administered by the physician at home, provided fresh anti-toxin can be secured. When bitten, the wound should be thoroughly washed and mopped with tincture of iodine, as in the case of cuts; or if the wound is deep, it had best be taken to a physician for it to be cauterized."

Stings of Insects:

"This is a painful, though not serious condition, and the pain may usually be relieved by the application of cold compresses placed over the site of the sting. The swelling usually disappears in a day or two and usually no harm results. The pain of the sting is caused by the acid of the poison of the insect, and it is a favorite household remedy to make a little poultice of common cooking soda and apply over the site of the sting, or to wet a bit of cotton with ammonia water in an effort to neutralize the acidity."

Foreign Bodies in the Eye:

"This causes a great deal of pain and such an offending body should be removed at once if possible. Do not permit the patient to rub the eye, as this rasps the surface of the eye and may cause serious damage. If the body has not imbedded itself in the lining of the eyelid or eyeball, frequently the tears will wash it out if the eyelashes are caught between the thumb and finger, and the eyelid held away from the eyeball for a few minutes.

"If this does not succeed, a bit of absorbent cotton, wrapped about a toothpick and soaked in warm salt water, made by adding a teaspoonful of salt to a pint of water, may be used to brush lightly over the lid or the eyeball, and if the offending body can be seen, it may be entangled in the cotton and removed. This is especially true of cinders and particles of dust.

"Frequently the offending body can be seen if the upper eyelid is turned backwards over a small lead pencil. This can be done by grasping the eyelashes between the thumb and finger of one hand, placing the point of the pencil over the upper eyelid behind the thumb or finger, and pointing in a downward direction gently with the pencil while pulling and lifting the edge of the lid forward and upward. The lid will be found to turn out, and if the offending particle is in reach it may be brushed off with cotton wrapped on the toothpick."

Snake Bites:

"Contrary to the general belief, the spreading head viper is not a poisonous snake. The poisons from poisonous reptiles kill the victim by getting into the blood stream; consequently, the very first thing to do is to shut off the blood in the part of the body that has been bitten, from the rest of the body. This can be done, if the bite is upon an arm or a leg, by tying a handkerchief loosely around the member between the wound and the heart and putting a stick under the bandage, turning or twisting it until it is tight enough to stop the flow of blood in that part of the body. This procedure, if done early, will probably save the life of the individual. The next thing to do is to enlarge the openings of the wound where the fangs of the reptile entered by means of a thoroughly clean knife blade. This is done for the purpose of permitting the poison to find its way out of the flesh. If there are no cuts or wounds upon the mouth of a healthy individual, the wound may be sucked vigorously in an effort to draw out the poison. A toothpick wrapped with cotton and soaked with pure carbolic acid may be inserted freely into the wound. The best thing to use, if it is available, is a strong solution of permanganate of potash. This is made by taking the crystals of potash and dissolving a teaspoonful into a half glass of water. This solution should be used freely in the wound repeatedly, and if one lives in a district exposed to such reptiles, it is well to have this remedy in the house (or camp) for such purpose. A competent physician should be called, of course, who will assist in the further treatment of the patient, and by gradually admitting the blood from the part bitten to the rest of the body, the patient can be made to resist the poison that may not have been removed or rendered harmless. The wound, after this, should be treated according to the directions given for cuts, or it should be treated according to the directions of the attending physician.

"It is a common error that has been responsible for

much harm, that whiskey or alchohol in large quantities is the best thing to use for snake bites; and many times the patient has been found to be in a drunken condition—much worse as a result of the alcohol than could have been as a result of the snake bite."

Breaks and Dislocations of Bones:

"These are serious accidents, and call for the attention of a physician. Until the doctor arrives, the patient should be kept entirely at rest. The broken limb should be gently straightened, if possible, in order to relieve the pain and tension upon the blood vessels; and in case of either a dislocation or a break cold or hot compresses can be used over the injury to reduce the inflammation or pain. The physician, upon arriving, will reduce the dislocation, that is, the bones will be put back together in proper position, and his directions as to rest and other management should be carefully followed.

"In the case of fracture, or the breaking of a bone, it may be necessary to apply some sort of splint, either of wood or plaster of Paris, or some sort of an extension device so that there will be a constant pull upon the bone, especially if it be a long one, in order that it may not become shortened while healing. The directions of the physician or surgeon should be followed carefully, and should not be changed unless there is a plain indication that something is seriously wrong, in which case, the physician should again be called for advice and new instructions.

"If a splint has been applied, and it slips down out of place, or is causing serious damage to the skin, or too much suffering after twenty-four hours, the physician should be notified at once so that the trouble may be corrected."

What the First Aid Kit Should Contain:

Every sportsman doubtless prefers a special kind of antidote or remedy for a given accident or illness, hence it would be impracticable to give a list of medicines for the first aid kit that would please everybody.

Perhaps a few general suggestions will suffice:

Liver pills for a torpid liver; (not many sportsmen have a bad liver).

Pepper and ginger in hot water for cramps and chills;

Quinine tablets for fevers, aided by a laxative, if needed; Quinine also for colds;

Antiseptic solution for mouth-wash, sore-throat, and disinfectant;

Cold cream for chapped face and hands;

Iodine for cuts, stings, etc.;

A quantity of sanitary gauze and absorbent cotton;

Ammonia, camphor, valuable for mosquito bites;

Carbolic acid solution;

And other articles to be suggested by your physician.

Many remedies can be made from common things that are included generally in the camp outfit. For instance:

Sore throat is often cured by using a piece of pork or bacon tied around neck by a dry sock or stocking;

Burns will be relieved by the application of common baking soda, fat or oil;

Scalds may also be relieved with common baking soda applied on a wet rag;

Toothache can frequently be stopped with warm vinegar and salt by holding in the mouth;

For poisoning, warm water often acts as an emetic if mustard and salt are put in it. Tobacco will cause vomiting if swallowed, providing you have no better remedy.

Poultices may be made from potato, rice, flaxseed, onion, mustard, bread, etc.

The Manifold Value of Common Salt:

Salt placed on the fingers when cleaning game birds and animals, as well as fish, will prevent slipping.

Salt dashed on a coal fire when broiling steak will prevent blazing from the dripping fat.

Salt thrown into a coal fire which has burned low will revive it.

Salt thrown on burning fat will stop the smoke and odor.

All vegetables that grow above ground should be cooked in salted water, while those that grow under ground must be cooked in fresh water.

Either sugar or salt will preserve meat, as either absorbs the moisture in it, which prevents decomposition.

For stings and bites of insects, apply dampened salt. Bind it tightly over the affected part. It will usually bring relief and a cure quickly.

Salt, dissolved in alchohol, is good to remove grease spots on clothing.

A pinch of salt added to each gallon of drinking water boiled for drinking use, will relieve that flat taste common to boiled water.

A tiny pinch of salt added to the coffee before the boiling water is poured in will add to the delicious flavor and aroma.

Various Uses of the Lemon:

Lemon juice put in milk and allowed to curdle, which is then bound upon the parts of the body swollen with rheumatism will ofttimes bring relief and reduce swelling.

Lemon juice applied to insect bites allays the irritation.

A dash of lemon juice in water makes a cleansing tooth lotion that will remove the tartar and sweeten the breath.

Two or three slices of lemon added to a cup of strong tea usually cures a nervous headache.

Half a lemon dipped in salt is good to clean articles of copper and brass.

A few drops of lemon juice added to scrambled eggs while they are cooking improves them wonderfully.

A teaspoonful of lemon juice added to a quart of water will make rice whiter and keep the grains separated when boiled.

Lemon juice and sugar will relieve a tickling sensation in the throat and an irritating cough.

Lemon juice in black coffee,unsweetened, will cure sick headache.

Strong, unsweetened lemonade, taken before breakfast, will cure a sick headache.

Lemon juice applied on soft cloth to a corn for several nights can then be pared off.

Lemon juice applied to a wound on a cloth over night is good to stop bleeding.

Gargle a severe sore throat with strong solution of lemon juice and water.

A little lemon juice added to the shampoo aids in cutting the oil on excessively greasy hair.

Hot lemonade is invaluable in colds and influenza.

Lemon juice and salt will remove iron rust.

Kerosene:

Kerosene is not only good to remove dirt, fresh paint, rust, etc., but is fine used as a disinfectant and insect exterminator, which often bother the camper. Ants, cockroaches, bed bugs, etc., leave "for parts unknown" when kerosene is applied in appropriate places.

Uses of Vinegar:

When cooking a tough fowl or other meat, if you will place one tablespoonful of vinegar in the water, it will save from one to two hours' boiling.

Vinegar and meal, used on hands when chapped by cold weather will be softened by their use.

Vinegar added to stewed prunes while they are stewing improves their flavor.

Vinegar, one teaspoonful, added to boiling whitefish improves the flavor of them wonderfully.

A vinegar stew, made of honey and vinegar, is fine for a severe cold.

GOOD POINTS:[1]

Food from the Forest:

"Guard against waste of wild meat" should be the slogan of every hunter. All edible portions of the animal killed should be utilized.

Do not let wild game be an added luxury; let it take the place of your market meat. No more game than can be eaten should be killed. Do not let your desire to tell a big story when you reach home lead you to shoot everything in sight. Good sportsmen will observe these conservation suggestions in addition to the game laws.

Point Duck Shooting:

Point shooting is the favorite method of the duck gunner. The decoys float in the water a short gunshot from the blind, and the ducks flying by see the decoys and come in to them. This kind of shooting is done on various waters all over the country, conditions varying in different localities. On the shores of some northern lakes and broad rivers the blind is built of stones laid up in the form of a wall, or in winter, of blocks of ice. In the marshes of the South Atlantic ducking grounds, stems of cane form the blind, or branches of trees or bushes are used.

Dynamiting the Pothunter:

The newspapers of the country have almost everywhere been a powerful force in crystalizing the sentiment of the protection by proper laws of fish and game as important resources of the commonwealth.

A New Jersey editor, a thorough sportsman, says Wild Life, recently received from a reader who desired to take a fish by questionable means a letter that contained this request:

"Please advise me how to dynamite a stream."

[1]Note: Good Points were taken from Mosby's Missouri Message.

The newspaper man sent the following advice:

"Four sticks of dynamite are sufficient. Tie them securely around your neck, attach fuse, light it and run as fast as you can away from the water to avoid injuring the other snakes and reptiles."

Camp Hints:

Going very light, most campers carry soap; yet it seems that for one reason or another, it is rarely if ever mentioned. There is a word to be said about it, however.

White soap is easy to be seen at night and, as most of the white soaps float, they are to be preferred to other kinds for camp use. Often the cake of soap is thrown into the canoe, where it runs riot at large, gumming up everything in sight. The added drops of water from a passing shower produce slippery footing and assorted expletives.

The celluloid or hard rubber soap box is not suited to campers, not only because it has to be handled like an egg, but because it is always larger than the soap. The metal box, though less easily smashed, is made to fit special toilet soaps, which is a great disadvantage.

A soap bag is easily made from a piece of canvas of suitable length and sides sewed up, after which this small bag, or envelope, was turned right side out. A metal suspender button was sewed on the front and a button hole made in the flap.

In use this soap container has proved its worth over and over again. It will take the largest size cake of soap and is never larger than the soap happens to be. Its cost is but a few cents and you can sit on it and walk on it with pleasure. When you have used the soap you place it on the flap of the bag, not on the sand, and, after rinsing, it is not necessary to touch the soap. Just pick up the bag by the flap and the button, dump in the soap and throw the bag anywhere among your duffle. Again, should the soap bag be forgotten and left out in the rain all night, there will be some soap left and no mess of it over the ground.

As wild cats are known to be great game destroyers, it is permissible to publish the following suggestion for their capture by trapping:

A Pen for Wild Cats:

The wild cat is a shy, slinking night prowler, found alike in hilly regions and thick swamps. It has no great degree of cunning, but can not be attracted to a trap from much of a distance, for the reason that it does not have a very keen nose. Scents help considerably in bringing this animal to the trap.

A wild cat has little appetite for decayed meat, so the meat must be fresh. Rabbits and partridges are good. It is best to build a pen by driving stakes into the ground, with an opening for the animal to enter. Set the trap in this opening and cover lightly with suitable material. Then hang the bait inside. A few evergreen boughs thrown over the pen will keep the snow out and make it look more hidden. Rabbits and squirrels are often a great bother to this set, by getting into the trap. It will help to keep the rabbits out if some dead brush is dropped in front of the pen. They do not like to jump through dead brush. A little springy stick under the pan of the trap will often prevent small animals from snapping, and so keep it ready for the heavier game when it comes along.

At butchering time a wild cat or two may be caught if the offal is taken to a likely place in the woods, and traps are set around it. The writer took three one winter in traps set around a dead horse.

When small game is plentiful, wild cats do not take bait very well. A set that may be used then, is prepared by making a long, narrow pen, or passage, that the animal can walk through, and hanging a piece of red cloth in it, with some scent on the cloth.

Along the edges of lakes, when they are frozen over, is a good place to set traps for wild cats. Here, or any place for that matter, it helps to hang a rabbit skin from a string

near the trap. On the ice, the animal may travel too far out to scent the bait, and its eyes are always keener than its nose.

THE CARE OF DOGS:

Do not allow other dogs or strangers to disturb the female until the puppies are at least three weeks old. Never feed grown dogs and puppies together; start to feed puppies at three week's old, buttermilk twice a day, morning and evening; this will clean their stomachs of worms. Leave the mother with them until they are at least five weeks old; then, for her own health, as well as for the health of the puppies, allow her to stay with them one hour a day for one more week, then feed twice a day, buttermilk or beef broth with bread crumbs (corn bread is best), little strips of raw lean meat is good twice a week, but very little until they are past four months old, at which time they will get their second teeth and can masticate more substantial food and will grow strong. Avoid sweet stuff, fresh milk or meat, as it has a tendency to produce worms.

Be sure to see that your kennels are well ventilated; if possible, have running water, at any rate a goodly supply of fresh water at all times. Disinfect thoroughly at least once a week. If nature does not provide it, have a good artificial shade and a perfectly dry kennel in damp and cool weather. Feed grown dogs not more than once a day, cornbread and table-scraps as a mixed diet. Best of all, corn meal and middlings with well cooked meat and soup, baked to a pone or mush. Dogs will eat this substance readily and it keeps them in perfect health. Exercise or work on game, if possible, at least once a day. To prevent fleas, and for mange and for all forms of skin diseases, use one part creoline to 100 parts of water, and dip dog, head and all. For cankered ear, saturated solution of boracic acid. Massage or rub thoroughly. For distemper, allow the dog his liberty and give him all the raw eggs and fresh milk he will eat. Give him a good dose of castor oil about twice a week.

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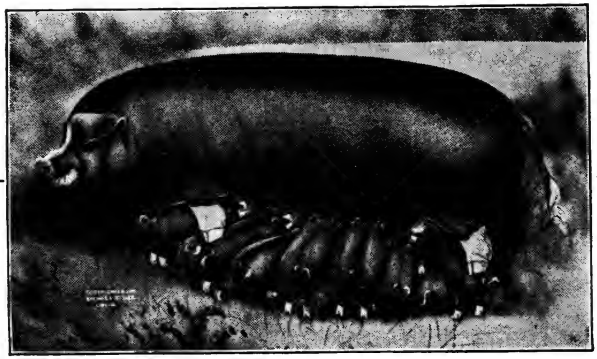

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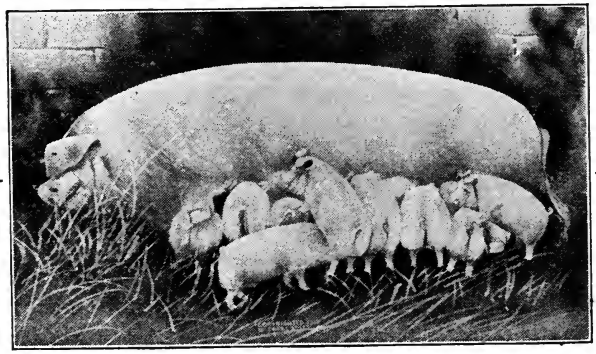

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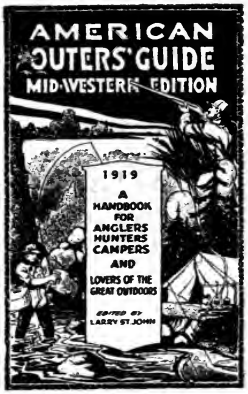

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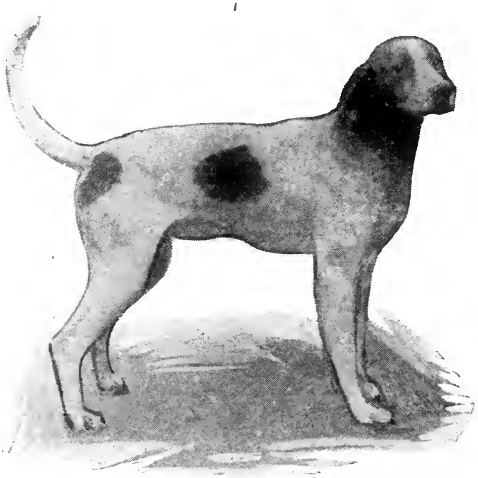

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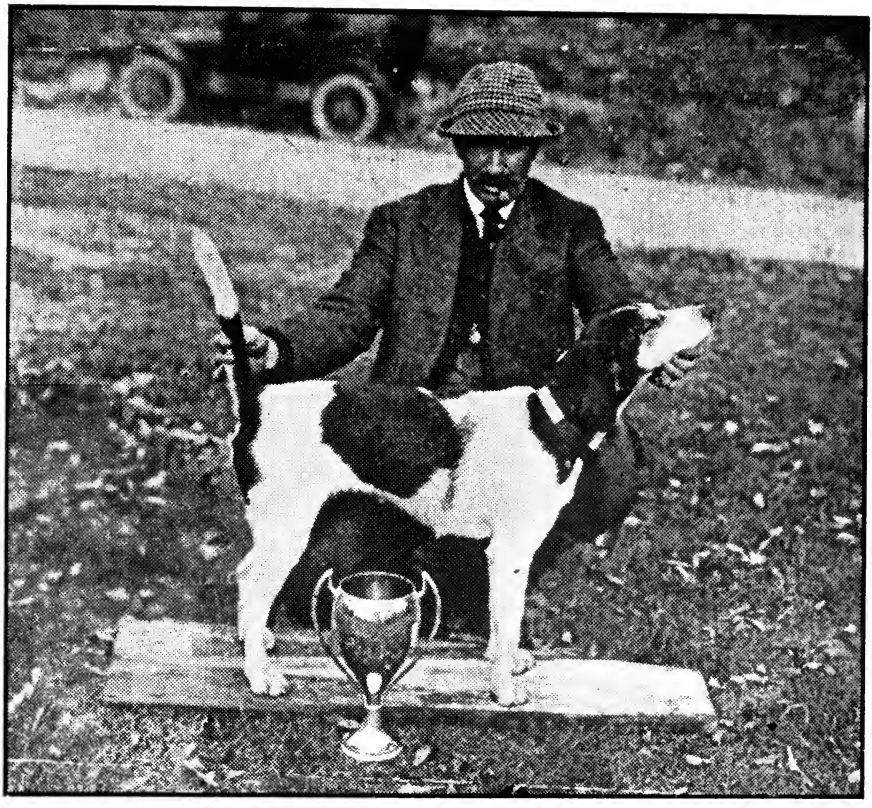

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