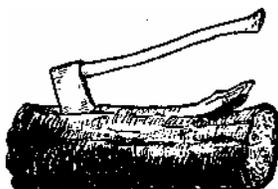


# TRAINING IN TRACKING

BY  
GILCRAFT

WITH FOREWORD BY  
B.-P.

ILLUSTRATED



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Editor's Note:

The reader is reminded that these texts have been written a long time ago. Consequently, they may use some terms or express sentiments which were current at the time, regardless of what we may think of them at the beginning of the 21<sup>st</sup> century. For reasons of historical accuracy they have been preserved in their original form.

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## FOREWORD

THE author has blamed me for the arrival of this book in print, and I gladly accept the responsibility, because for a considerable time I have been urging Scouts and Scouters to devote more study to this subject of Tracking. From time to time I have quoted stories from my experience illustrating the value of observation and deduction, and I know of nothing which is more calculated to develop the senses than the study and practice of Tracking.

It doesn't seem right somehow that this science of observation and deduction which forms a most valuable asset in a man's character is not as yet included in the school curriculum except in such schools, as have adopted the Boy Scout training.

To begin with, it "has a great educational value for the boy or girl. Observation develops to a remarkable degree the alertness and efficacy of the senses; by continual practice the eyesight becomes quickened and strengthened, so also the hearing and sense of smell and touch.

Deduction promotes in a still more wonderful way the alertness of the mind through development of reasoning power, imagination, patient research, common sense and memory.

It is a science which has the further benefit of being full of attraction and interest for the youngster, so that once he has been introduced to it he takes it up with increasing keenness and practises it for himself.

The practical value of such education in supplying a new quality in the character of a man is incalculable, no matter what line of life he may elect, whether he takes up law or medicine, exploration or research, business or soldiering, or what you will.

It is essential, too, to him if he would gain knowledge of material facts or if he would read the character or feelings of other men; if he would enjoy the many little pleasures that Nature can give him; and, indeed, if he would make full use of the talents which God has given him.



## AUTHOR'S NOTE

You can blame B.-P. for this book! It was he who instigated it, or – should I say? – reluctantly allowed me to write it instead of him.

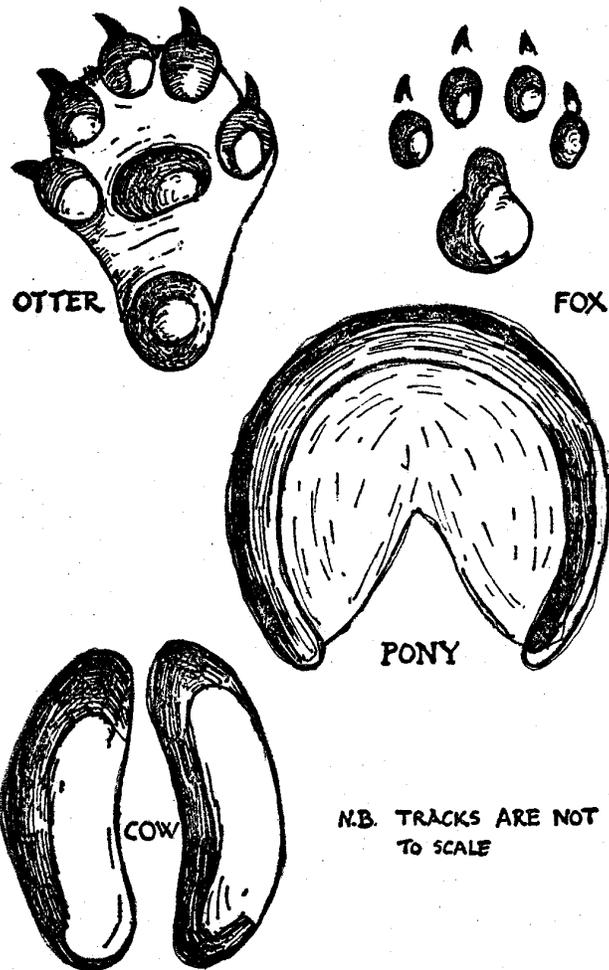
It is to him I am indebted for many suggestions and much material.

I was first intensively interested in the subject during a voyage home from the East in 1912 with G. W. Gayer of the Indian Police, whose book on *Foot Prints* I have freely used and quoted. Gayer's investigations into the art of Tracking had been stimulated by reading Lord Baden-Powell's book, *Aids to Scouting*, just as previously my interest had been aroused by another of B-P's books, *Scouting for Boys*.

My thanks are due to Mr. Martin Baker and *Scouting* for permission to make use of the discovery of a prehistoric cast.

To many other Scouters I am indebted for help and encouragement, for permission to reproduce extracts from articles and books already published, and for various practical illustrations.

Although all the chapters have been written for the purpose of this book only, a considerable amount of the material contained in them has already appeared from time to time in articles published in *The Scout Sign* (Bengal), *The Scouter*, and *The Scottish Scout*.



PRINTS OF FEET OF OTTER, FOX, PONY AND COW

# TRAINING IN TRACKING

## CHAPTER I

### WHAT IS IT ALL ABOUT?

IN an address at Oxford, B.-P. prefaced his remarks with the following story:

“A party of savants and explorers who were carrying out a scientific expedition into the interior of Australia very nearly came to a tragic end in the great Thirstland in which they found themselves involved.

“That they came out again alive was due to the powers of observation, deduction and ingenuity displayed by a little savage girl of fourteen.

“Half-perished with thirst, they were searching the plains for a drop of water, when the girl noticed some ants creeping up the stem of a tree and making their way into a small hole in the bark. She at once inferred that they were going there for some purpose, and, passing a twig into the hole, she discovered that water was contained in the tree trunk. She thereupon stripped the bark from some green twigs so that they formed a succession of small tubes which she fitted one within the other, and, passing the end of this tube down through the hole into the tree, she provided an instrument by which each one of the party was able to suck up his fill of water, and thus the expedition was saved.”

As the Chief Scout went on to say, it was not the knowledge of Greek or of higher mathematics, or of science which the members of this expedition possessed that saved them, but the natural knowledge of one who had been brought up to some of the essentials of life.

The outstanding quality of an educated man, which gives him a very decided advantage over his less fortunate brethren, is his ability to observe, comprehend and analyse. That is rather a difficult saying. Whatever the situation that confronts him, he should be able to observe its main features almost instinctively, to realize the bearing they have on the situation, that is, to comprehend, and to weigh these main features up in his mind, and so analyse them that he is in a position to suggest the remedy and the various steps which will lead to a solution of that particular situation, even although he himself has not the technical or professional knowledge to undertake the execution of these steps himself.

Sometimes we wonder how it is that a politician, when his party is in power, can be considered fit to undertake the discharge of his duties as the head of an important Government Department. It is because he has a trained mind, and so can turn to any problem and by study comprehend and analyse it.

F. M. Crawford says: “One who is in the habit of applying his powers in the right way will carry system into any occupation, and it will help him as much to handle a rope as to write a poem.”

If a man lacks this ability, then it will prove almost impossible for him to rise to a position of trust and responsibility.

But this ability can be acquired, and Scouting does offer countless opportunities for its acquisition, and that is why it has now been recognized as a valuable adjunct to our existing scheme of education.

“By the term ‘Scouting’ is meant the work and attributes of backwoodsmen, explorers and frontiersmen.”

The real backwoodsman – not the penny dreadful counterfeit – is the hero of every boy. His life and doings supply examples which will be of value and use in the everyday life of modern civilization. The education of the Australian and Indian tracker, of the African hunter, of the Canadian trapper, contains points which are invaluable to their more civilized brethren, even in cities and slums.

There is no better education than observation, deduction, memory and ingenuity, and it is one which every boy will gladly carry out for himself, if only he is put in the way of doing so.

The practice of observation and deduction, the development of memory in respect of small details and signs, and the ingenuity developed in their application lead to a closer and more effective study of life as a whole and of nature in particular with the result that even the poorest or the least promising boy can benefit physically, morally and spiritually.

Tracking is a very comprehensive term in itself and in Scouting it seems to cover also the preliminaries of Observation so that, not infrequently, the boys are expected to run before they can walk, that is, to track before they have learnt to observe.

According to *The New English Dictionary on Historical Principles*, the ulterior derivation of the word "Track" is uncertain, but it is generally thought to be from the Teutonic. "If this be the source, the original sense would appear to have been the line or mark made on the ground by anything hauled or dragged, whence also the mark made or path beaten by the feet of man or beast." And so the meaning of the word is variously given as: "The mark, or series of marks, left by the passage of anything; a trail; a wheel-rut; the wake of a ship; a series of footprints; the scent followed by hounds."

Tracking in the vocabulary of the Scout is the science of the study of the marks made by some animate thing which lead to the identification of that thing, to the knowledge of where it has gone, and to an understanding of its special peculiarities. The thing may be a human being, an animal, a bird, or what not, it is all the same. When applied to animals in particular it is known by different names in different continents: Trailing in North America, Spooring in Africa, Pugging in India.

Tracking is undoubtedly a most powerful aid in the development of the powers of both observation and deduction. It teaches the Scout to use his eyes and his brains. With the former he notices every little sign and mark, on the ground or elsewhere, and with the latter he tries to discover what these signs and marks mean.

Who was it? What did he do? Where did he go? It is a regular puzzle. The Scout is on his mettle. Is he going to solve this *puzzle* or is he going to be defeated? Largely that will depend on the previous training and on the amount of practice he has had. It is not as easy as a crossword puzzle, for many of the clues are missing, and others that are there are most misleading. But, win or lose, it is a good game and well worth the time spent on it.

But Tracking is not an art which is easily acquired. There is a lot of preliminary spade work to be done; there is a lot of hard slogging work to go through; there are habits to be acquired first. The habits of perseverance, of patience, of care, of observation have to be cultivated.

The Scout must be content with small beginnings, just as the wolf cubs in W. J. Long's *Northern Trails* were taught to hunt grasshoppers before they practised on larger game: this very instructive story is quoted in *The Wolf Cub's Handbook*. From these small beginnings he can work up gradually to more difficult tasks and problems.

But he must realize that the whole art of Tracking is based on the habit of observation, on a comprehension of what is observed and on the ability to analyse what is observed and comprehended so that a correct deduction is made from it.

And so he should start by practising the power of observation and the process of deduction whenever, and wherever, he goes about, as advised by the Chief Scout in Chapter IV of *Scouting for Boys*, and he will soon be able to mark his progress for himself.

In this book we propose to take stage by stage those various practices which lead up to Tracking itself, and then to discuss the various qualities that have to be acquired, and the various facts that have to be learnt in order to make some sort of a success of Tracking when we come to it.

When you have read through the book, if you get that far, you will not know how to track, but I hope you will know something of how to set about it.

The rules of success are the same now as they were hundreds of years ago – hard, conscientious work – and that does not apply to Tracking alone, as you will readily realize. It is a mighty easy phrase to say or write down, but it is extremely hard for some of us to perform.

Anyway, it is up to the Scout to do his best.  
And that is what it is all about!

## CHAPTER II

### GENERAL TRAINING OF THE SENSES

“ONE of the most important things that a scout has to learn, whether he is a war scout or a hunter or peace scout, is *to let nothing escape his attention*; he must notice small points and signs, and then make out the meaning of them; but it takes a good deal of practice before a tenderfoot can get into the habit of really noting everything and letting nothing escape his eye.”

So says the Chief Scout in *Scouting for Boys*, and he ought to know, as he has been a war scout, and a hunter, and a peace scout; “but it takes a good deal of practice before a tenderfoot can get into the habit.” It is the practice which leads to the habit that we have to consider now. Too frequently we dash ahead at things without taking the trouble to see that all the work we have already put in is remembered. Some tests – Kim’s Game, for instance – seem so easy that it is not worth while to pay attention to them, and so, as Scouters, we give them no practice, and, in consequence, our boys do not get into a *habit* of observing.

“Sign” in tracking, and in life in general, affords the clue to the desired information. The “sign” is meaning less to us and of no use as a clue, if we have not been trained to observe beforehand, since, ten to one, we will miss at least half of it.

Major Hesketh-Prichard, a noted traveller and big-game hunter, writes of the modern scout in his book *Sniping in France*:

“First and last, I suppose that Burnham was the greatest scout of our time. Physically a small man, he was amazingly well knit, and very strong, and his many feats of hardihood owed much to his compact and untiring build. His name will live on account of two feats – the first, his passing through the entire Matabele Army and shooting the M’limo, the witch-doctor, who was responsible for the Matabele War; and the second, his dash through the Boer lines, when he blew up the railway on the far side of Pretoria,

“The first article of Burnham’s faith was absolute physical fitness, and his idea of physical fitness was much more rigorous than that of most athletes. It was not with him a matter of merely keeping his muscles of speed and endurance in good fettle, but – which is a much harder thing – the keeping of all his senses at their highest pitch of efficiency. Thus, apart from his hearing and eyesight, which were very keen, I have never met anyone else, except one Indian, who possessed anything like his sense of smell. He could smell a small fire in the open at an extraordinary distance, and he told me that this power had often been of the greatest value to him.”

There seems to be no doubt that civilization, as we know it, has a tendency to dull the senses of sight, hearing, smell, taste and touch. They become dull because we are not so dependent upon them, and because the opportunities for their use have been lessened.

Town dwellers specially suffer in this respect. Vision is limited by walls and roofs, and sight is harmed by artificial light. Hearing is dulled by the continual crash and bang of modern traffic. Smell is clouded by the fumes of petrol and oil that hang about the streets and by the smoke from factory chimneys. Taste is lost by the cloying messes that are dished up as sweets and such like! Touch is the attribute of a few skilled trades and professions only, and is never called into play by the average person.

In talking of observation all these senses come into the picture, because “sign” is not confined to things that can be seen, but includes also things that can be heard, smelt, tasted and touched.

Again, not only have the senses to record an impression – automatically or unconsciously perhaps – but they have to telephone that record to the brain so that it can act upon it. An observation is useless unless it is crystallized in the memory. That is a saying difficult to illustrate, but possibly you can remember an occasion on which a companion on a walk has said something like this: “I wonder why that horse we passed was lame.” As he said this your memory has wakened up. “By Jove, the horse was lame, and I never realized it till you

mentioned it." Observation must not be divorced from memory, if we are going to benefit at all. So it is that our general training of the senses must include the training of mental alertness.

Our job, as Scouters, is to think for ourselves in the first place, to reason out statements for ourselves, to discover the whys and wherefores of a Scout activity for ourselves, helped to a certain extent by the advice and experience of others, but not dependent on others. In the second place we have got to apply the same principle to our Scouts. We want to lead them to think out things for themselves, not to accept blindly but to reason, whether it is a Scout activity, a school lesson or religion. They must comprehend, observe and analyse!

With your observation games and practices, therefore – of which I shall say more in the following chapters – should be incorporated a certain number of games and practices which can be classified as mental tests.

Many educational authorities now make use of mental tests in their ordinary school curriculum, but that is no reason why we should disregard them, although that is the way we sometimes argue. If a subject is dealt with in school, say some, then we should not touch it in Scouting. They forget that it is sometimes the atmosphere which makes all the difference, and that a boy of his free will may select an activity which he would, and does, hate when set him as a task. They also forget that we are amateurs and should be glad to follow a professional lead.

I do not want to go into the question of mental tests scientifically, or criminally for that matter; they are used vicariously to test intelligence, to make psychological experiments, and to secure the confession of a suspected criminal; but all we want to use them for is in training in quick thinking. I will, therefore, merely mention a few of the many tests which it is possible for us to utilize.

They have a very definite use. Generally they are popular amongst boys. They need little in the way of rules or material. They can be played by Patrols. They can be utilized to calm spirits down after a rowdy game. They can fill up odd corners in a Troop programme, or keep a few boys quiet when others are occupied on something else. They help to pass a wet afternoon in camp. They are good for intelligence, observation, memory and knowledge.

First of all let us take Sequences. You can write on the board, or on a piece of paper: 2, 4, 6, 8, 10; or 1, 4, 9, 16, 25; or Z, a, Y, b, X; and then ask the Scouts in a given time to add, say, five more figures or letters, as the case may be. For instance, our first example, when you have counted ten, should have been completed thus: 2, 4, 6, 8, 10, 12, 14, 16, 18, 20. A very easy test to start with, but one which can be made increasingly difficult as progress is made.

Then Rearrangement can be tried. In this case a lot of jumbled names are written down, and, again in a given time, the Scouts have to write these names out in alphabetical order.

Time is of great importance in these tests, but, working progressively, a fair amount should be allowed at first and afterwards be cut down by degrees. It is a mistake, however, to allow too much time, even at first, since the element of competition against time will be missing, and the boys will not be on their mettle. From the beginning let them realize they have something to beat, even if it is only your watch!

Then Rearrangement can be applied to the order in which things happen. For instance, how would you arrange – Second, Scout, Troop Leader, Patrol Leader; or, Rover Scout, Scouter, Scout, Cub? There is a little catch there, for whether it is in order of happening or in order of importance, the Scouter comes last!

Rearrangement can be applied, too, to the order of inclusion, as in the example: Pocket, match, shorts, box.

It needs quick thinking to decide, against time, whether the right-hand word in the column below is the opposite of the left-hand word, or the same, or has no connexion:

Morning	Evening.
Remove	Restore.
New	Knew.
Show	Demonstrate.

Analogies are also useful, either when the fourth word is left blank, and has to be filled in in a hurry, as –

Foot is to Boot as Hand is to -----,

or, when a choice is given of several words, the correct one being underlined or written down:

Scout is to Cub as Frog is to Pond, Fish, *Tadpole*, Bank.

In a similar kind of way sentences can be read out in which the missing word has to be supplied:

The Tenderfoot fell into the stream and ---- his clothes.

In place of the blank a number of words can be inserted from which a choice is to be made.

The order of words in sentences can be upset and the victims asked to say quickly whether the statements are true or not:

The sea in the water is salt. . . . *True*. *False*. *Not Known*.

The Scout Badge Kings is a Woodman. *True*. *False*. *Not Known*.

Animal there is Mars in life. *True*. *False*. *Not Known*.

The classification of words is another way of racking the boys' brains. Either the correct word can be added or the wrong word can be struck out, as in these two examples:

Book Page Print - Counter, Shop, *Cover*, Name.

London, Glasgow, Birmingham, Manchester,

York. (Here all towns are in England except one.)

There are many mental tests in connexion with words that will occur to you. The craze for crossword puzzles is a case in point. There can be no doubt that it did stimulate people to think, it gave them knowledge, it added to their vocabulary, even while it did increase the sale of dictionaries. Word Building and Word Taking, Magic Squares, Buried Words, Anagrams, Transformations, and others of a like nature – the parlour games of yesterday – have some use in mental training.

The use of codes is also very valuable in mental training. The members of each Patrol should be encouraged to communicate with each other in some simple code, either one where a number has been substituted for each letter of the alphabet, or the letters of the alphabet have been interchanged. Each Patrol should be encouraged to make its own secret code, while the Troop as a whole might adopt another! Various means will suggest themselves by which codes can be utilized in other ways for mental training. A code message can be found, part of which has been translated *en clair*, and the Patrols try and worry out the whole code that has been used. As progress is made, the codes used can be made more difficult and complicated. Secret messages, secret orders, and so on, all have their place in the scheme, and will interest the boys.

Finally, mention might be made of rapid fire observation questions. Here are a few I turned up the other day, but I cannot remember their source:

WHY?

A leopard has a spotted skin;

A cat has whiskers;

A wild rabbit has white underside to tail;

Some dogs have bushy tails;

Camels have humps;

WHY?

Draw the Great Bear as seen any night between 9 and 10 p.m. during the latter part of June.

Draw the new moon.

In what months do you expect to see the following flowers: Chrysanthemum, Iris, Daffodil, Primrose, Snowdrop, Poppy, Wallflower, Sweetpea?

Draw from memory: A dog's footprint; A cat's footprint; Six footprints of a fowl; Six footprints of a sparrow; A cow's footprint; A sheep's footprint. (This question is a bit advanced for the stage we have so far reached!)

What do these letters mean : R.S.V.P.; R.M.S.P.; cf.; e.g.; A.B.; B.A.; N.S.W.; W.S.W.; G.R.I.?

To these may be added one or two general knowledge questions on current events; even the question "Who is the Chief Scout?" has produced many erroneous replies from Scouts!

If we get through some of that kind of preliminary training, we shall be laying a foundation for future training and practices. If we really think of the odds and ends of time that are at our disposal, it is wonderful how we can work some of these practices in. If the Troop is going to camp by train, jot a few tests down in your notebook. They may be useful in relieving the tedium of the journey or in filling in time during a wait at a station. I know that it sounds very unheroic, but one can do some adventuring in the brain as well as in the world!

## CHAPTER III

### OBSERVATION INDOORS

OUR further practice in training in Observation can be obtained both indoors and out of doors, so that there is really no excuse that Scouts – wherever they may be, and under whatever difficulties they may labour – should not be trained to make a good deal more use of their powers of observation than other boys not so fortunately placed.

As far as indoors is concerned we are guided by the Second Class Test of Kim's game – "to remember sixteen out of twenty-four well-assorted small articles after one minute's observation." Frequently we ignore the intention of this test; firstly because it is an alternative to a track; and secondly because it seems so easy. Although it is an alternative to an out-of-door practice, it is well worth doing for its own sake. The ease depends entirely on the standard of accuracy that we set. Do you remember how the original game was played in the shop of Lurgan Sahib in the Simla Bazaar? The Hindu child had beaten Kim hands down in describing the fifteen stones that had been heaped on the tray. Kipling records the subsequent conversation and events:

"'He is thy master,' said Lurgan Sahib, smiling.

"'Huh! He knew the names of the stones,' said Kim, flushing. 'Try again! With common things such as he and I both know.'"

"'They heaped the tray again with odds and ends gathered from the shop, and even the kitchen, and every time the child won, until Kim marvelled.

"'Bind my eyes – let me feel once with my fingers, and even *then* I will leave thee open-eyed behind,' he challenged.

"'Kim stamped with vexation when the lad made his boast good.

"'If it were men – or horses,' he said, 'I could do better. This playing with tweezers and knives and scissors is too little.'"

"'Learn first – teach later,' said Lurgan Sahib. 'Is he thy master?'

"'Truly. But how is it done?'

"'By doing it many times over till it is done perfectly – for it is worth doing.'"

There seems hardly any need to say any more on the subject of Kim's Game and its use! Kim was being trained for secret service work. That is the way his training started. I have known the same training used in other years for the same purpose. However, here again we must endeavour to work progressively. It does no good to let a Tenderfoot start his practice for this test with the full number of articles. I am quite aware that frequently no practice is given beforehand at all, but I really cannot legislate for such cases. A dozen odds and ends are quite enough to start with, and a considerable amount of time should be allowed for them to be looked at. It is easier at first for the boy to name and describe each article afterwards instead of writing them down. If the person conducting the game has arranged an alphabetical list beforehand, his check will be greatly facilitated.

I have said "describe": this is important. Each article should be correctly designated and properly described. "A long black-looking thing" is no proper designation or description of a fountain-pen, and yet I have known it accepted as such! In many Troops, especially those with which I have been personally connected, the education of the Scouts is of a low standard. When the articles of Kim's Game are written down, therefore, the Scouter is frequently presented with some intricate problems to solve. Here are a few I have met with: Chlack; Chock; Chork. Skaf; Scaff; Scalf. Kies. Visle with rope; Visile Scouts. Tin for aches. Sir's neck rope. A tick rope tied a knot on it. One brass earthenware cup. A piece of schalk, a piece of leather which is tweisted into a circle and a peace of string it is coloured.

There are certain hints in regard to Kim's Game which might prove useful. The number of articles should be carefully counted first of all. I have known a boy so worry trying to think of an article that wasn't there that he forgot two of those that were there. The person setting the game had actually set out one article less than he said.

Look at the smaller things first, and the larger articles will be remembered almost automatically. Group similar articles together in your mind. Don't hurry too much, keep cool, a minute is a long time if you have to keep quiet for that length of time. "Do it many tunes over until it is done perfectly."

Although you will have worked progressively with Kim's Game and increased the number of articles, and decreased the time as progress was made, always insist on the correctness of the description. There is no necessity to play the game in the same form. Just as the nature of the articles may vary – Kim played it "sometimes with veritable stones, sometimes with piles of swords and daggers, sometimes with photographs of natives" – so may the conditions under which it is played vary. It is not necessary to have all the articles on one flat surface; try a few on the floor and a few on a chair. The articles can be placed in a corner of the room where shadows render the observation more difficult. They can be suspended from the ceiling. They can be observed in a looking-glass.

The game can be played with the Patrol as a team, and various complications introduced so as to bring in team work. It is not necessary, for instance, for a list of the articles to be given at once after observation has taken place; another scout activity may intervene, or those taking part compete in an obstacle race, before a list of the articles is required of them.

The game can be sprung on the Troop all of a sudden without any kind of warning, in the midst of a rowdy game.

This change of conditions is an important factor, for in actual life you are not warned beforehand as a rule that something which requires observation is going to appear or to happen. It just appears or happens! If you have acquired a habit of observation you will have recorded it; if not, you will be so startled that you will remember nothing. So let there be an element of surprise in your practice from time to time.

A fleeting observation of one single article is a good change from Kim's Game proper. In this case what is required of the victim is as correct and full a description as possible of the article in question. Consider, for instance, all the details that can be recorded after a look at an envelope that has come through the post, especially one from across the seas.

The details of a room can be remembered, or not as the case may be. As a variation, the positions of articles can be changed after a first look, and the change commented on after a second look.

Photographs depicting changes in the furnishing of a room can be prepared for purposes of comparison, while the use of "What is wrong?" or "What is missing?" pictures, as published from time to time in *The Scout*, should not be ignored.

Two other elements may be introduced into the training of the sense of sight – colour and distance. Even indoors training can be given in more distant recognition by holding up articles at the opposite end of the room. Colour can be utilized in two ways: – First, to make an article insignificant by the fact that it is surrounded by other articles of more brilliant colouring, and second, to secure the recognition and remembrance of assorted colours, as, for instance, different pieces of coloured wool.

You will find several other games for training observation by sight in *Scouting for Boys* and *Scouting Games*.

The sense of hearing can again be benefited by numerous games which can be played indoors, individually or by Patrols. "Noises out" is perhaps the best known and the most useful. All that is required in this game is for someone who is concealed behind a screen, or behind a door, to make a series of noises, either by dropping articles on the floor, or by moving articles about, or by using his mouth to make various sounds.

Then there is the game of "Hunt the watch," when everyone, blindfolded, has to search for a watch the ticking of which can be heard if they keep quiet. This game teaches some of the rudiments of stalking, and brings home the importance of keeping quiet and of moving quietly.

This game leads to a sense of direction by ear which can be practised by various other means. For example, the Patrol can sit in a wide circle with one of their number, blindfolded, in the centre. He has to identify both the nature and direction of any sound made by the other members of the Patrol. The P.-L. should be required to indicate whose turn it is to make the sound, as otherwise there will be confusion.

Again the element of surprise should be brought into the training. A big noise outside the door in the middle of an ordinary Troop meeting merely calls forth a quiet "Now jot down all of you what made that noise," from the Scoutmaster.

There is one other consideration in connexion with the development of the sense of hearing, and that is the influence of dancing and music. I am not able to develop the theme properly, but through these two arts a sense of rhythm and a sense of tone can be developed, which will be useful in ordinary life. For instance, each Scout should be able to distinguish a very high note, on a violin, say, from a very low one, and be able to say whether one note was lower or higher than another. It seems very elementary, but the number of people who are tone deaf is fairly large.

Smell can be trained only by practice in smelling! A certain amount of practice at "Scout's Nose" (*Scouting for Boys*, p. 136) will be necessary. In the middle of the evening some paper can be burnt unnoticed in a cupboard to see if anyone present will notice it. If they don't, don't let on about it; try again another night.

Taste is somewhat dependent on sight and smell, but need not call for so much care or practice. Yet there are some walks of life that depend upon a keen sense of taste, and not all these walks are through vineyards either. Touch needs a good deal of training. Blindfold obstacle races indoors are amusing and useful. Let two blindfolded Scouts loose in a room to find each other, and let the others watch in complete silence, and those looking on will learn a lot about feeling their way in the dark.

The identification of various objects by touch alone should be frequently practised. The Hindu child had had considerable practice at this before Kim came to upset the even tenor of his ways. The articles need not necessarily be small. It is possible to identify a person by passing the ringers lightly over his face. The blind can do this very readily, just as they learn to identify a person by the sound of his voice, or even the sound of his footsteps. In time, after much practice, it will be found that it is possible to sense obstacles in the way before they are even touched.

First of all the Scouts should be trained to find their way about in the dark in a known room, and then to find their way about in a room that is strange to them, possibly only strange because the furniture has been moved.

I have dealt somewhat inadequately with this question of Observation Indoors, but I have tried to suggest that there are possibilities of variety even indoors which will keep the Scouts interested in the subject, and, at the same time, help them immensely in their observation out-of-doors.

The question of the Observation of the Individual is being dealt with in a separate chapter, but, as will be seen, it affords great scope and opportunities for indoor work also.

## CHAPTER IV

### OBSERVATION OUT-OF-DOORS

WE seem to be getting nearer the real thing when we start to talk about Observation Out-of-Doors. It is hard to connect the Scout with indoor work, yet a great deal of Scout work, owing to the vagaries of the climate, must perforce be done indoors, and it would be a mistake to let slip the opportunities that indoor work affords us for laying the foundations of the more real Scouting out-of-doors.

Out-of-doors observation is rendered more difficult by the fact that the range of vision is increased. In towns the range is bounded by houses, and so somewhat confined; in the open country it is practically limitless. As B.-P. said before *Scouting for Boys* was written at all: "It should be a point of honour with a Scout that nobody sees any object that he has not already seen for himself." Then he was talking about war scouts, but the same is as true of the peace scouts of to-day.

It is noticeable that those who are accustomed to live in open spaces have usually a much keener eyesight than those who live in towns. Men "who go down to the sea in ships" have a clear, long vision. Savages and aboriginal peoples have the same keen sense of sight. The reason for it is that they have had considerable practice and that they have been trained, by others or by dire necessity, to keep their eyes well open.

Out-of-doors your eyes should never rest, but continually glance round in every direction, up and down, right and left, in front and behind; for the real Scout has eyes in the back of his head. You should be able to see both things that are near and things that are far, both things that are small and things that are large. I will not repeat the many illustrations that may be found in *Scouting for Boys*, because they can be read there.

So whenever a Scout is out of doors at all he should be encouraged, both by example and precept, to keep his eyes open all the time. Repeatedly one hears the remark, "How difficult it is to take up any nature study in towns." As a matter of fact it is comparatively simple if the Scouter and the Scout will but observe. There are trees, flowers, birds and even animals to be seen in towns, and the stars shine equally on the town and on the country.

Don't necessarily start your practice with, "Now, boys, we will practise observation." They should be practising it all the time, and your training of them in it should usually be mixed up with something else. For instance, a Scouter in camp found he was smoking too much, and realized he was not setting a particularly good example. He offered a penny for every match that could be picked up in camp, giving as his reason that he wanted the help of his Scouts. Their observation was stimulated, although the penny was not really necessary, and his own ingenuity was stimulated, for he carried in his pocket in camp thereafter an empty shaving-stick tin into which he placed his spent matches!

Practice for the Pathfinder Badge, one of the first and most important qualifications of a real Scout, brings practice in observation in its train. Besides having a detailed knowledge of his own particular locality, the Scout must be able to act as a kind of miniature Cook's Guide anywhere within his district. He cannot do this unless he has used his eyes as he went about, and has remembered what he has seen.

It is the same with many other Scout activities; they are all linked together in one way or another, just as in this book on Tracking there are linked together such apparently diverse things as mental tests, observation, stalking, human beings, animals, birds, vehicles, detective stories, sand, snow, and all the rest of it!

Observation in towns need not necessarily be confined to the alternative test to Kim's Game – "describe satisfactorily the contents of one shop window out of four, observed for one minute each" – or to looking at advertisement hoardings.

A contributor to *The Scouter* asked some three years ago, "Has anyone thought of following up the various things – iron grids, gas and water valves, electric supply boxes – on the pavement? We are much too prone to take things for granted; we turn on the gas and light it, and, so long as it gives a good light, we do not care how it is made or how it gets to us;

we ring up someone on the telephone – what does it matter how the wire comes to the house, whether in the open on poles or under the pavement, made into a great cable with, perhaps, five or six hundred other wires all neatly covered with paper and wax and the whole bundle covered with lead and threaded through a concrete conduit.”

There is scope for much observation and much investigation along these lines.

In Yarn 12 of *Scouting for Boys* will be found several hints on how to teach observation in town and country, while on the next two pages will be found half a dozen games that can be utilized. Possibly the best of the six is “Far and Near,” which can be played with infinite variety if the Scouter puts on his thinking cap.

Outdoor observation naturally includes the following of trails, and these are dealt with at greater length later on. Trails can be laid in town as well as in the country.

Observation is applied to the senses of hearing, smell and touch can be worked into stalking practices and games, and the art of stalking, too, is dealt with at greater length elsewhere.

Again, in order that the habit should be acquired it is necessary that the element of surprise should be brought in out of doors as well as indoors. In a walk in the town surprise questions should be put from time to time: “What was the name of the street we last passed on the right-hand side?” “What was the number of that car that we passed drawn up against the kerb just now?” “What were the number and name of the house it was opposite?” “What number was on that point policeman’s collar?” Scouts should always be encouraged to ask themselves such questions, and so enliven an otherwise dull journey.

In the country the nature of the snap questions will change to such as these: “In what field were turnips growing?” “What kind of cattle were in the field to the right at the bottom of the hill?” “How many oaks have we passed since we started?” “How many lines of wire did these telegraph poles carry?” “What was the shape of the weathervane on the church steeple?”

The fact that motion attracts the eye can be easily demonstrated by half concealing a number of Scouts and inviting the others to spot them. They will do so with difficulty while those concealed remain still, but as soon as they move they will spot them easily. Sudden movement is easily seen, as will be realized when you come to practise stalking. Every time you move you press a button, you become *luminous*, you draw every eye to you.

There is an important lesson of observation to be learned from the following story that B.-P. tells in *Aids to Scouting*:

“Common sense and a little reflection will often suggest to you the most likely points to look.

“Thus, once I was having a match with a Shikari in Kashmir as to which of us could see farthest.

“He pointed out a hill-side some distance off, and asked me if I could tell how many cattle there were grazing on it. It is only with difficulty that I could see any cattle at all, but presently I capped him by asking him if he could see the man in charge of the cattle. Now, I could not actually see this myself, but knowing that there must be a man with the herd, and that he would probably be up-hill above them somewhere, and as there was a solitary tree above them (and it was a hot, sunny day), I guessed he would be under this tree. A look through the glasses showed this surmise to be correct.”

And so the cycle is completed – look, comprehend, analyse, deduce!

There is another important factor connected with observation out-of-doors, and that is the necessity for recording in one’s mind or on paper exactly what has been observed.

It can be readily seen that such First Class tests as deal with the judging of heights, distances, and so on, are tests in observation. It is not so readily appreciated that written reports, sketching and mapping are also matters in which observation is essential. When you do appreciate it you can see how the various activities of Scouting dovetail together. In order to practise one activity it is necessary to get a little practice in another, and so on right up the scale.

Your Scout is not much use to others unless he can record that he observes in an intelligent and intelligible manner. If he is sent out in advance of a party to bring back information, it is necessary that he should be observant, and that he should remember what he has observed, and, moreover, that he should be able to impart the result of his observations to others. Your training

in observation out-of-doors must of necessity include the making of reports, the making of rough sketch-maps, and, if possible, the making of sketches.

I cannot go into these subjects here, they would need a book to each of them; all I can do is to point to their importance in the scheme of Scouting.

In the crowded street of a largish town not so long ago an old woman was run over in full daylight by a motorcar. Not one of the many bystanders who saw the accident happen could remember the number of the car or its make, although a few had a vague idea as to its colour. It is such incidents as these that point to the necessity of training people to observe, to be able to remember what they have observed, and to be able to repeat and write down what they have observed. In the next chapter I shall return to that question and try and suggest one way at least of giving Scouts practice.

## Chapter V

### OBSERVATION OF THE INDIVIDUAL

THE Chief Scout advised us when traveling by train, tram or bus to notice every little thing about our fellow-travelers: their faces, dress, way of talking and so on, so that we could describe them pretty accurately afterwards. We have plenty of opportunities of such practice, and, although we cannot always test the correctness of any deduction we make, it does add more interest both to the observation and the journey if we try and think of the characters and occupations of each.

The judging of character from appearances is very difficult indeed, and so do not imagine that you will make much of a success of it, or that a super-sleuth has been lost in you. Men with the specialist training and experience of years behind them frequently make mistakes.

It was some such practice as this that Kim was given in Lurgan Sahib's shop in the Simla bazaar. All afternoon long he and the Hindu child would watch the many and curious visitors that came to the shop. At the end of the day they "were expected to give a detailed account of all that they had seen and heard – their view of each man's character, as shown in his face, talk, and manner, and their notions of his real errand."

Try this idea with your Scouts – let them have visitors to their Troop meetings and describe them afterwards.

Before this you should, in order to point out important points, have done a certain amount of more elementary practice.

The old-fashioned shadowgraph, a sheet with a strong light behind it, is a useful means of demonstrating that it is possible to recognize an individual at a distance, before his features can be seen. Scouts pass in turn between the lamp and the screen, while the rest of the Troop, on the other side of the sheet, try to identify them. At first they will guess according to height and length of nose, both of which naturally vary as the relation of lamp, Scout and screen varies. Later they will begin to realize that it is the set of shoulders and head, and the set of the knees and the gait that are the more constant marks of recognition.

A Scouter was watching a display of Scout pictures in a district where he was well known. Suddenly there was a loud and prolonged burst of applause. "What is all the fuss about?" he asked the fellow sitting next to him. "Oh, that was you they were applauding. Didn't you see yourself walking away?" The others had recognized him by his walk; he could not recognize himself.

It is the same when we come to the question of disguises: a further and very important step in the observation of the individual.

After dinner Lurgan Sahib's fancy turned more to what might be called dressing-up, in which game he took a most informing interest. He could paint faces to a marvel; with a brush-dab here and a line there changing them past recognition. The shop was full of all manner of dresses and

turbans, and Kim was appareled variously as a young Mohammedan of good family, an oilman, and once – which was a joyous evening – as the son of an Oudh landholder in the fullest of full dress. Lurgan Sahib had a hawk's eye to detect the least flaw in the make-up; and lying on a worn teakwood couch, would explain by the half-hour together how such and such a caste talked, or walked, or coughed, or spat, or sneezed, and, since 'hows' matter little in this world, the 'why' of everything. The Hindu child played this game clumsily. That little mind, keen as an icicle where tally of jewels was concerned, could not temper itself to enter another's soul; but a demon in Kim woke up and sang with joy as he put on the changing dresses, and changed speech and gesture therewith.

The important part of a disguise is not so much the dressing the part, that is comparatively easy, but the acting of it. That is one of the reasons why play-acting is of undoubted use in the practice of Scouting. It enables us to put ourselves in the place of another, to live his life, to dream his thoughts. It will be found later on that this is of considerable importance in Tracking.

Kim's training in disguises stood him in good stead when he was called upon later on to save the Mahratta from capture and death on the hot, dusty train journey between Somna Road and Delhi.

Let your training in observation then include the practice of disguise and acting a part. Set the Troop an example, if you can, by challenging them that they will not notice you between certain hours and within certain limits. Introduce games, such as "Dispatch Runners" into which the element of disguise enters. Indoor competitions to spot the changes in uniform, or to discover what is being wrongly worn, or what is really, or apparently, missing, are also helpful.

Individuals will naturally differ in the points to which they look and in the deductions they make. A doctor was able to say that a man had been badly wounded some years previously in his left leg, because he noticed that when the man was tired his left shoulder dropped an inch or so lower than his right. Previous to this the man had congratulated himself on the fact that no one, who did not know, could tell because he had no signs of a limp.

The average woman's observation of individuals is probably more acute than that of the average man's. She has acquired a habit of looking at people, especially other women, so that at a glance she can tell what clothes they are wearing, the way they do their hair, and can describe their faces with fair accuracy.

Judging height and build is important in the observation of individuals and special attention should be paid to these points. At first it will be found that the descriptions pay more attention to the clothes a person is wearing than to the person himself, whereas it is easier to change one's clothes than one's nature and personal build. As mentioned already in connection with the shadowgraph, it is not necessarily the obvious features that help to identify a person.

A slight change in the facial appearance, such as the absence, or addition, of a moustache will guard against a passing scrutiny, whereas a habit of gait or of carriage will give one away at once.

The actions of individuals should not be overlooked special training in observation is required in this particular.

The best way to start is to tell the Scouts that they have to observe every action of a particular person from the word "Go" to the word "Stop." The person selected need only go through a few more or less ordinary actions such as lighting a cigarette and walking a few paces. Afterwards his actions can be of a more complicated nature. It is best to have the observation done by Patrols so as to bring in an element of team work. In a short time it will be found that, by a division of labor, a Patrol can give a very accurate description of what has been done. This is a good game to play either indoors, or during a halt on an afternoon's outing.

Of a somewhat similar nature is "Dressing Statues." A victim is selected to act the part of the statue. The Troop is sent out of the room while the Scouters array and place the "statue" in a suitable position. The Patrol Leaders are called in and given a minute to observe the "statue." They are then given two minutes, or more, in which to tell their Patrols exactly what they have observed, meanwhile the "statue" returns to life and resumes his ordinary habiliments. At the end

of two minutes the Patrol Leaders are called back and remain interested spectators of the subsequent proceedings. Each Patrol in turn is then called in and given a fixed period of time in which to rebuild and remodel the statue that the Patrol Leader has described to them.

But perhaps the best, as it is the most difficult, of all such observation practices is the "Unrehearsed incident."

In the midst of an ordinary Troop meeting or in the quiet of an afternoon in camp a boy suddenly staggers in crying for help, after him comes another with murderous intent. The first falls to the ground, stabbed, the second escapes. The incident is all over in a few seconds. Almost before the Scouts have realized the first appearance of the intruders, the "murderer" is gone and the body is left on the floor. Then, "Now then, you fellows, just write down a report to the police of what you have seen;" and the "corpse" can get up and dust his clothes. You can be sure that his description will be written up, but it doesn't help much because he has been done for. The "murderer" may get a word or two, and yet he is the one the police will want to know all about.

A careful analysis of the varying descriptions of the incident will well repay the time spent. It will be found that, at first, the differences are extraordinary: the sequence of events varies; the descriptions of the murderer vary; the type and color of clothes he wore vary; the duration of time varies; the words spoken vary. In fact it will usually be found that no two descriptions agree anywhere near together. It has been found that even trained students of observation cannot see a sudden incident such as this in exactly the same way. It has been the subject of psychological study and experiment, but into that side of the question we need not enter. It is sufficient to say that this is a stunt which is useful, and which can be repeated, though not exactly in the same form, time after time.

Mention may be made of another exercise since it is specially designed to train the deductive faculties.

A number of small articles, such as are carried in a man's pockets – match box, pencil, a few coins, an old bus ticket, the return half of a railway ticket, a small account-book, and so on – are placed on a tray or table. A small yarn is told of a man being found wandering about the railway station having lost his memory; the police are anxious to identify him if possible, but his description has been published and broadcast without result. The Troop has been invited to assist, so it will be best to make an inter-Patrol competition of it and see if anything can be deduced from the clues afforded by the contents of his pockets. Each Patrol should make out its own tale, and the Patrol-leaders should be told to give their reasons for any deduction they may make as to the man's habits, occupation, residence, etc. Naturally, considerable thought should be expended beforehand on the choice of articles so that they can be made up into some kind of logical story.

Thus in quite a simple way it is possible to bring in the sequence of observation, comprehension, analysis and deduction.

Perhaps it would be helpful if I gave an actual illustration of such a game: The following articles were laid on the table – an empty Swan match-box, a shut pocketknife, some small change, a handkerchief, cigarettes, another match-box – not Swan – containing matches. The Swan match-box, besides being empty, was slightly crushed and the inner part slightly torn. Certain letters on the label were marked with a tiny, unobtrusive dot, and these letters spelled out the following sentence: "Meet me Sat. at one." The Patrols were told that all these articles were found in the pockets of a man found murdered shortly after one o'clock on Saturday; the empty match-box was grasped in the man's hand.

The story, briefly, was that the murdered man was a member of a gang that passed messages by means of the match-box. He had been suspected of betraying the others, and had been summoned to a lonely place and murdered. The murderers had tried to secure the match-box, but had been interrupted, and had fled, leaving it in their victim's grasp.

Two of the Patrols spotted the dots and got the story substantially correct. The others missed them, and were hopelessly at sea.

Strictly speaking, this game does not come within the scope of observation of the individual, but that is not very material. It is an observation game that can be played indoors or outdoors and affords plenty of room for deductive reasoning.

## Chapter VI

### STALKING – POINTS TO OBSERVE

I HAVE purposely combined the word Stalking with the word Observe in the heading to this chapter because I have been told that Stalking does not properly enter into the subject of Tracking. Most assuredly, however, Stalking necessitates observation, and very frequently it is a preliminary stage to a long track, more especially when it has been badly done. At times, however, the position of the two are reversed and a stalk ensues in consequence of success in following a track.

My only doubt has been where to place the subject in the book, whether to place it before discussing the various details of Tracking or afterwards. I have decided to place it before for two reasons in particular. Firstly, because the ability to stalk does call for the proper exercise of the senses of seeing, hearing and smelling and of observation as a whole. Secondly, because the opportunities of practising Stalking are more numerous and more varied in the average Troop than the opportunities of practising Tracking, while that practice and the playing of Stalking games will undoubtedly make the Scouts eager to go on to Tracking and will thus enable them to overcome the greater difficulties of making a start with that activity.

Well, after that preamble, what is Stalking?

It is the art of approaching an object under cover or by stealth, but is more generally described as the ability to move rapidly – or fairly rapidly – from place to place, without being seen and without being heard, while at the same time seeing and observing everything that is going on. Moreover, the true art of Stalking is to exercise this ability where there is good cover, where the cover is scanty, and even where there is no cover at all.

Personally, I hold that it is necessary that every Scout should learn the main principles of Stalking before he can practise Tracking in its wider sense.

No matter what the object of the Stalk may be, three important points must always be kept in mind – the blending of colours, stillness and wind. It is necessary, at the outset, to elaborate these three points carefully.

In approaching an object, the greatest care must be exercised to obtain a background blending with the colour of the clothes worn. It is an impossible task to change the colour of the background, but it is possible, other things being equal, to change one's position against a more suitable background, and to start the stalk from that quarter. But it is more important to adapt the clothing to suit the type of ground over which one may expect to stalk.

This is not so difficult as it may appear at first, since neutral tints merge with different types of ground colouring. The Scout uniform is very suitable for stalking purposes, and the colours of shorts, shirts or jerseys, and scarves selected by the Troop should be chosen with one eye at least on their out-of-door and stalking advantages.

A one-colour uniform, say khaki, is neither necessary nor advisable since it is a good plan to break up the colour as much as possible, in order that the outline of the figure should not be so easily recognized at a distance. In Scotland, for instance, the kilt, of the hunting tartan of any clan, and a khaki or grey shirt provide a very suitable stalking kit. There is considerable controversy as to whether the general colouring of stockings should be light or dark. I have tried many experiments with very varying success, but am inclined to vote for the light colouring for

stalking purposes, following the practice of nature, which is for the under parts of birds and animals to be of a considerably lighter texture than their upper parts.

The Chief Scout tells us in *Scouting for Boys* (see Chapter V) how to stalk without being seen too much. Experience shows that these points need emphasis and so I make no apology for reiterating some of them here in the form of injunctions!

Beware of exposing yourself on the skyline, or you will be quickly seen. It looks very nice at "the pictures" to see a Sheriff's posse pursuing a band of cattle stealers silhouetted against the sky on the top of a ridge, but in actual fact the pretty picture they make would not help towards the capture of the cattle stealers.

If carrying anything which shines, field-glasses, camera, and so on, be careful to see that the sun does not make it shine like a mirror. In my still more tenderfoot days, I remember setting out on an important and secret journey with an unmasked axe stuck into the straps of my pack. That axe heliographed my movements to all and sundry for quite two miles before I discovered the traitor!

If you think you have been spotted remain perfectly still until your quarry turns its head away, and then move slowly and quietly under cover. Even when right out in the open there is no cause for alarm, provided your background harmonizes with your clothes, and you remain perfectly motionless, or "freeze" as it is technically called. You will certainly arouse suspicion, and probably alarm, if you disappear suddenly. I shall have more to say about the art of freezing later on.

Take advantage of all cover; slightly undulating ground is frequently quite sufficient to cover your approach, if you lie down flat and crawl. Don't, however, ignore a round-about road if it is easier going and quieter than a more direct one; you will get there just as quick, if not quicker.

The actual methods of progression in stalking I will leave to the next chapter, but I might emphasize one or two other particulars in regard to stillness now.

When working through woods and undergrowth, don't brush through the small bushes but lift them aside with your hand. It delays you a little in time, but it is worth it. I remember once being after a leopard that had been terrorizing a village. I had a most inadequate weapon in hand which rather terrorized me but necessitated getting well up to the animal if the shot was to have any chance of success. I had not done so badly and was getting within certain range when my orderly, who was some paces behind, brushed rather impatiently through some scrub jungle. I did not see that leopard again!

When standing still to listen – ears are a very important part of the stalker's equipment – avoid, if possible, halting with the sun shining on any part of you; get into the shade as, otherwise, the slightest movement on your part will attract attention. All stalking animals realize this; for instance, a leopard stalking on a moonlight night invariably stops under the shadow of a bush when taking observations. The clothes he wears are also specially adapted for the purpose.

Generally speaking, in stalking try to avoid working with the sun in your face, especially when the sun is low on the horizon in the morning or in the evening. There are several reasons for this: it is difficult to get a good snapshot with the sun in your eyes, it is difficult to see and distinguish an object in the distance, and it is easier for your quarry to spot you with the sun shining on your clothes. All this despite the fact that you will be told later on that it is easier to make out a track with the sun shining towards you and so casting a shadow on the track.

The wind is one of the stalker's greatest difficulties, and nothing but long practice will enable him to get even with it. It is easy to find out the actual direction of the wind by wetting a finger and holding it up to notice which side is coolest, and so to deduce that the wind is coming from that direction, but it is very difficult to say that that direction will remain constant for any length of time.

If you are to windward of your quarry, the chances are ten to one that you will be scented, and your quarry will be off before you get anywhere near it, unless it is a human animal. The ordinary animal's sense of smell is considerably higher than ours. It is said, for instance, that an elephant

can scent a man at a thousand yards, whereas a man finds it extremely difficult to scent an elephant at a hundred yards, and yet the scent the elephant emits is considerably more penetrating than ours. Perhaps this accounts for the fact that a very famous elephant catcher, Sheik Madan, who caught more elephants than any other one man, and had many hairbreadth escapes, was not five feet high!

An experienced modern explorer and hunter is very emphatic on this question of scent and has written this in a letter:

“Remember you stink most disgustingly; the wind from your person, and everything you have touched, gives off a stench that every animal flies from as from the plague. The taint of your touch remains for weeks. The snail leaves behind him his trail marked in shining slime. Remember your every movement is similarly and permanently recorded for the animal world by a well marked band of stench, obvious and offensive to every nose.”

And that, said John, is that!

On level ground the wind does not vary very much without warning, while a wind blowing uphill or along the side of a hill is usually steadier by far than one blowing downhill. Among our hills and mountains the clouds of mist higher up are a sure guide as to how the wind blows.

Many Tenderfoots go out into the woods or on to the moors looking for birds and animals, and expect to see them standing out against trees and bushes as in Landseer's pictures. They should be disabused of this before they start, and taught to look for an indistinct outline, in or behind a bush, or a black or white spot in the distance, or a shining spot, the sun's reflection from coat or plumage. The camouflage of animals and birds is a study in itself and a study of peculiar interest and fascination, but it is not possible to do more here than mention it.

One of our well-known Scouters used to tell a yarn of how he started off to stalk a herd of zebra and completely lost sight of them on the edge of a wood, and did not sight them again until he bumped into the hindquarters of one of the herd.

Many insects give extraordinary fine examples of camouflage and protective colouring, as, for instance, the twig caterpillar and the thorn moth.

On reaching likely ground, therefore, the stalker should not be in a hurry to get over it – about half a mile an hour is not too fast. His ears should be constantly on the alert. His eyes should always be on the move, sweeping far and near, right and left, up and down, looking not only at bushes and trees but through and beyond them. The untrained stalker usually looks at a bush, and quite fails to see what is behind it. He should be taught to stoop down occasionally and to look under bushes, and, invariably, he should move with the utmost caution and quiet. Then he may be rewarded with success.



## Chapter VII

### STALKING – HOW TO GET DOWN TO IT

STALKING is usually associated with the wilds, with big game hunting, and sometimes with deer stalking in parts of our own country. But it is not necessary to have something very large to stalk, one can get a lot of good fun and practice out of stalking a dog or a cat at times. Certainly there is as much, or more, satisfaction to be got out of a good stalk for its own sake, as out of the wounding, killing, or capturing of any kind of wild animal. I have tried both and I know. B.-P. says in *Scouting for Boys*: "Every animal is interesting to watch, and it is just as difficult to stalk a weasel as it is to stalk a lion."

The ability to stalk does not come naturally; it must be acquired at the expense of much practice and the cost of many abrasions and scratches. I have already indicated something of what is required in the way of observation. Color, just a spot of it, movement, just a flick of the ear, sound, just a tinkle of a hoof on gravel, are the indications which help you to locate the quarry. The acquisition of this knowledge of what to look for demands considerable observation and practice.

Then it is necessary to know something about the ways of your particular quarry. It is always a mistake to underestimate one's opponent. How and where does it feed? What precautions does it take to guard against surprise? How quick is it to take alarm? What sort of places does it frequent? What kind of cover does it go to? How does it get there? And, when you have observed, comprehended and analyzed all that, and more, then you must consider how you are going to solve the whole problem of getting right close up to it.

So it is not such an easy matter as some would have us imagine, and because it is not so easy, there is all the more fun and enjoyment to be got out of it.

All the time, if you are up against another Scout or a large animal, you may be being stalked in your turn and be in blissful ignorance of the fact. In the diary of an uncle of mine I came across this confession:

There were lots of tracks of bears on the soft ground and mud, and I was eagerly looking out for a shot. I retraced my own track, after a short interval of some ten or fifteen minutes. There, on the top of my own foot tracks, was the fresh trail of a bear, which had apparently followed me along for a considerable distance, but though I had crept stealthily along, watching for a chance, I never got a glimpse of him.

"Stealthily" was a good word to use because it so exactly describes the mode of progress that should be adopted in stalking. The actual method, walking, crawling, slithering, varies according to the distance you are from your quarry and the kind of country you are moving through, but all the time you must use cunning and move stealthily.

Firstly, mention should be made of the "cautious approach," which merely consists in walking calmly and quietly in the direction of the supposed quarry, or in a direction which you consider is favorable to your purpose. You have not come to grips with the game yet, but there is no knowing when you may come to close quarters and so you have to be wary and to take advantage of rising ground, of dips, of the cover afforded by trees and bushes or the bed of a stream. Even this requires practice and an eye for ground, so that any casual observation does not lead you along a wrong line which will suddenly expose you to the view of everybody and everything within miles.

Secondly, when you are getting within range, your approach must be made still more cautiously, and it is best to adopt what is usually known as the "upright crouching position." This requires practice in lifting the feet and in balance. For this you should adopt the Backwoodsman's walk. The feet should point straight forward so as to offer the least resistance to any obstacles that may be encountered, for if the toes turn out they act as hooks. The knees should be kept slightly

bent and relaxed. The feet should be lifted well off the ground at every step, and not shuffled along. The ball of the foot should touch the ground first, followed by the heel. The weight of the body should be placed gradually on the whole sole of the foot so as to avoid snapping any twig that may be underneath it. A firm balance should be obtained on each leg in turn before the other is advanced, so that at any moment, in any place, and in any position, you can remain poised like a statue and as quiet. At the same time the arms should be kept still as you move and not be swung violently about. Every movement should be stealthy, silent and deliberate. In fact, you must put your brain into the sole of your feet and your eyes into your toes as you *feel* your way along.

For practice, indoors or out, such games as "Grandmother's footsteps," "Statues," "The Valley of the Blind," "The Blind Pirate" and others will be found useful. Out of doors the best practice ground is a small wood or coppice which is strewn with dry leaves, especially beech leaves.

Thirdly, there is the "feline crawl," which is brought into use when the distance between you and your quarry is lessening and when cover is getting scarce. Any common domestic cat can demonstrate this method to you. Watch a cat, study its methods and copy them, for the cat is a great stalker. The hind paw comes automatically up to the position that the corresponding front paw has occupied. You have to crawl along on hands and knees. The hand feels for a suitable place on which to rest and the corresponding knee comes up to the same position. Care should be taken to lift the knee and foot from the ground and not drag them, but equal care should be exercised so that the feet are not waved in the air. Care also should be taken not to hump the body up in the middle, like a camel, but to keep the hindquarters low. The head should be the highest part, and that too should be kept as low as possible, and certainly not bobbed up suddenly or jerked from side to side. As before, every movement that is made should be slow and deliberate.

I must confess that a great deal of my own practice in stalking of this kind was obtained in playing "hide and seek" amongst the heather, but it was not particularly a parlor kind of hide and seek that we affected as the seeker had to secure his quarry before he was caught, and that usually meant a low tackle despite any boulders there might be about! Apart from that, "Scout Hunting," (*S. for B.*) "Stalking the Deer," "Stalking and Reporting" (*S. for B.*) and other games of a similar nature are all useful in affording practice.

Lastly, there is the "flat crawl," when you are right up with your quarry. This method is slow and very tiring, especially for the stomach muscles, or after a heavy meal. This, above all, is the occasion when it is injudicious to go out in your best Scout kit. You will want an old shirt and pair of shorts for this game, or the "fighting shirt" which our Danish Scouts affect.

It is necessary to go down full length on the ground, flat on the stomach, with the head down. The body and legs should be kept absolutely stiff and the legs close together. The toes should be turned well out and the heels kept down so that practically the whole of the inner side of the foot rests upon the ground. If this is not done consciously, there is a tendency for the feet come up and attract attention. You now have to work yourself forward, bit by bit, a few inches only at a time, using the hands and the sides of the feet. This can be done by placing your forearm flat on the ground in front of your head and by bringing the other forearm up in front of it, and so on, the toes being used as levers on which to work. Instead of using the forearms it is possible to move forward by placing the hands on the ground close to, almost under, the body on a level with the chest, and to pull yourself forward with them. Care should be taken to keep the elbows well down and close to the sides.

If it is safe to expose the head sufficiently to look round, then it is possible to do the flat crawl rather more on the side than on the stomach, and to bend the knees sideways and bring them up to help. Your movements then will be something of a cross between a "feline crawl" and a "flat crawl."

Frequently you find that when you are stalking you suddenly, even when you are going dead slow, burst out of cover, and are liable to be spotted. In that case there is frequently only one thing to do. You must "freeze" instantaneously, and when the opportunity offers slowly and

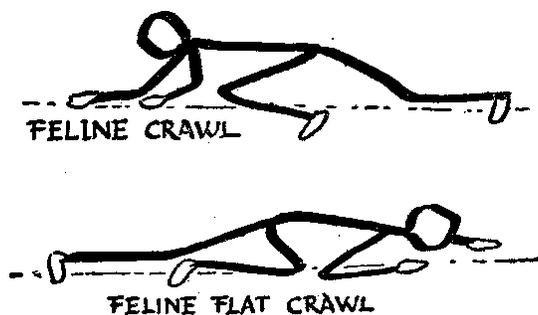
carefully work back to cover again, remembering that any sudden movement is liable to give you away.

To draw away under these circumstances, it is best to crawl backwards, keeping your body and legs absolutely stiff, and levering yourself back with your toes and hands working together. At the same time your face and head should be kept close to the ground and steady. Even when you are back in cover again, be very cautious indeed about raising your head to get a look round.

And now a word or two in regard to "freezing." It is not absolutely necessary that you should be behind something in order to remain unobserved. If there is a suitable background it is possible, as I have already said, to assume a position right out in the open without any very great danger of being noticed, provided you keep your body, limbs, and especially your head absolutely still. This also needs a good deal of practice at odd moments wherever, and in whatever position, you happen to be. Whatever method of stalking you are utilizing, you should have trained yourself to be instantly still and motionless for a considerable period exactly in the position you happen to be whenever there is the slightest alarm.

In *The Drama of the Forests*, Arthur Heming tells of his travels in the far north of Canada and of the skilled woodcraft he learned from Oo-Koo-Hoo, a mighty hunter. Here is an example of Oo-Koo-Hoo's teaching in regard to freezing.

"I should not only remain motionless while the animal was gazing toward me, but I should assume at once some form that suggested the character of the surrounding trees or bushes or rocks. For example, among straight-boled, perfectly vertical trees I should stand upright, among uprooted trees I should assume the character of an overturned stump, by standing with inclined body, bent legs, and arms and fingers thrust out at such angles as to suggest the roots of a fallen tree. And he added that if I doubted the wisdom of such an act, I should test it at a distance of fifty or one hundred paces, and prove the difficulty of detecting a man who assumed a characteristic landscape pose among trees or rocks."



## CHAPTER VIII

### STALKING BY NIGHT AND LYING DOGGO

STALKING decently by day is bad enough, but it is still more difficult when it comes to stalking by night, and yet there are so many valuable lessons to be learnt out of a night stalk that it is an essential part of stalking training as a whole.

The first point that should be brought out is that it is foolishness, amounting almost to criminality, to send a young Scout out in strange country on his own. All of us have rather a fear of the dark. The trees and fences become magnified, sounds become intensified, the ground becomes more uneven, until gradually we feel a sinking sensation inside which warns us that it is time to take a grip of ourselves. But when we have become accustomed to these apparent changes we begin to appreciate the subtle beauty of the dark and become "quick to read the noises of the

night." Let the young Scout become accustomed to the change by degrees, first of all in companionship with the others of his Patrol, and then with one pal, before he starts to stalk on his own by night.

The game known as "Night Scouting," where the effect of darkness is obtained by the wearing of crepe masks, is especially valuable in practising for real night work. The Scouter can see what is going on all the time, and so can the other Patrols who are waiting their turn to play. The Scouter can criticize, advise, and admonish as the game proceeds, and teach by practice which is always better than theory. The others can see the mistakes that are being made and can profit by them.

The great difference between stalking by day and stalking by night is that in the former the stalker relies on his eyes in order to approach his quarry, while in the latter his eyes are of very little use to him. Because of this more dependence has to be placed on the senses of hearing, smell and touch.

Loss of sight brings with it loss of direction, and uncertainty of the line one is taking. You can experiment with this in the daytime and see how a person who has been blindfolded practically invariably diverges to a flank after a certain distance, and how as soon as the divergence has commenced it becomes greater and greater until the blindfolded person eventually walks in a kind of spiral. This is the reason, too, why one so frequently hears of people getting lost in the jungle or in mist.

To remedy this inevitable tendency it is necessary to take precautions when you start on your night stalk. If it is a clear starlit night you will experience no difficulty, as the stars will give you your direction provided you take your bearings when you start. Even in the dark, try to make a note of the landmarks that you pass, taking care to glance back at them after you have passed so that you can see their different appearance from the other side.

If there are no stars to guide you, then your difficulties are increased. The wind may help, if it is constant, and if you note its direction at the start. There may be a slightly stronger light in the west, or in the east, it depends on the time of night, which will give you a rough indication of direction.

But in the main you will have to depend upon the senses of hearing, smell and touch to help you and guide you. At night, when there is a stillness in the air; a man's voice, the bark of a dog, or the rumble of a train, will carry a long distance as compared with these same sounds by day. If you place your ear to the ground, or against the end of a stick that is touching the ground, you can frequently hear footsteps a long way off. At first you will find it difficult to identify the exact quarter from which a sound comes. In this case it is a help to close up one ear and listen with the other only.

On the other hand the noises that you make will be correspondingly intensified, and so it behoves you to be very careful as to your own movements. The methods of stalking you utilize will be the same as those by day, but you will find it more difficult to keep your balance, and will find the obstacles to your path apparently greatly increased. If you want to make a simple experiment to prove how the loss of the sense of sight disturbs the power of balance, stand on tiptoe and, still standing no tiptoe, shut your eyes; almost immediately you will discover a tendency to overbalance forwards.

At first you will find that you are certain to make more noise as you stalk, in which case do what you can to move only when there is a covering noise in existence, such as the wind in the trees, or, if you are in a thickly populated country, the noise of a motorcar passing down an adjacent road.

When you are up against others in a night stalking game, once you are within touch of each other, it is best to keep as low down as possible. The dangers of the skyline have been referred to before; they are especially grave at night, so that if you are stalking in more or less open country in the upright crouching position and an opponent is stalking flat, he will probably be the first to spot an enemy.

The sense of smell will aid you not only to discover an enemy or your quarry but also to fix your whereabouts if you are in known country. The Gauchos, of South America, can find their way at night by smelling and tasting the grass from time to time. The skippers of many trawlers and fishing boats can tell their whereabouts by smelling the sand and mud brought up from the sea bottom. Smoke, whether of tobacco or of a fire, can be smelt an incredibly long distance at night. In *The Refugees* Conan Doyle comments on this: "There is little wind and so I think that we may light our pipes without danger. With a good breeze I have known a burning pipe fetch up a scalping party from two mile distance; but the trees stop scent and the Iroquois nose are less keen than the Sioux and the Dakotah."

On the other hand, a scratch of a match or a spark fire can be readily seen.

The sense of touch will enable you to feel your way in the dark. The Chief Scout reminds us that Burnham, the great American Scout, who made his way back to the main body when Wilson's party were massacred on the Shangani in Matabeleland, did so during the night by feeling his way along the track made by the party in coming.

So encourage Scouts to walk out at night and practise by listening for sounds and learning their meaning, by looking at the stars and the lighter horizon, by distinguishing shadows from objects at a distance, by using their sense of smell to find out what is happening round about, and by feeling and identifying different objects in the dark

One can learn a great deal of what is happening round about just by lying doggo, whether by night or day. At night it is an easy task to lie hidden, provided you keep still, and keep your senses alert to what is going on in the animal and bird world. By day it is more difficult. But even then you will be surprised to see how soon the wild inmates of a wood cease to pay attention to a motionless figure, and go about their ordinary business as if no interloping observer were near.

Although strictly speaking Stalking implies movement, still there are times in which more can be observed by staying in the same place, and by lying in wait for birds and animals.

Bird photographers now adopt "hides" in which to conceal themselves, so that their involuntary movements are not noticed by their feathered friends. At first these hides were very elaborate affairs, stuffed cows, artificial trees, and so on. Now it has been realized that a rough shelter of boughs or sacking suffices to allay the birds' uneasy qualms.

A hide built in the nearby woods or on the moors will act as a good observation post to any Scout who desires to study natural habits. And it is to be remembered that a knowledge of these habits will help him in his stalking too, for he should be alive to the warnings given him by animals and birds. Startled birds, for instance, spell danger, and practically all varieties have an alarm note which differs from their ordinary calls. A hide up a tree is good, provided the hider realizes he is not hidden when he sits across a branch: he must conform to the lines of the tree if he desires to escape notice, and lie along a branch. A study of trees will help the choice of the most suitable to use for hiding purposes.

I have endeavoured to show that from the Scout point of view stalking is a useful exercise in itself, bringing out qualities of eye, ear, nose and brain which will prove useful in after life. It appeals to boys and men of all ages, and in the actual practice of it there is a definite purpose in view. It may be just to get over the ground unseen: it may be to pit one's wits and abilities against those of another fellow: it may be to observe bird and animal life: it may be to make sketches or take photographs. Whatever the object is, it does not include the capture or killing of any animal or bird; so far as we are concerned, the gun does not enter into the picture, our snap-shooting is done with the camera only.

A great advantage in taking up Stalking practice is that the smaller boy is not handicapped in any way; in fact, if anything, he has the advantage for he has less to conceal! Stalking games and practices can therefore be utilised without the necessity of having to depart in any way from the ordinary Patrol as a unit, even if the ages of the Scouts in the Patrol do differ.

The art of stalking is not easy to acquire, but comes only by much practice, and so one must not be disheartened by apparent failures, for each failure teaches something that will be remedied

next time. Although at first it will appear impossible to get through a wood without being seen or heard by any of the others, after a time more proficiency will come, until at length success is achieved.



## CHAPTER IX

### FOLLOWING A TRAIL

I AM using the word "trail" to designate a track that is made artificially, as opposed to the track that is made by the feet of an animal – human or otherwise. This is not a correct interpretation of the word, but my difficulty is that I wish to make a distinction between the tracking of human beings, or animals, or birds and the following of other signs on the ground or elsewhere.

The Scout is interested in developing his senses, sight, hearing, touch, smell, and his memory when he has to utilise these in order to take him from one place to another. We have seen how in Stalking appreciable development of the senses must take place as practice is gained. Now we want to discuss another means of development which brings movement into play.

In discussing Observation I have mentioned the necessity of working progressively, and of consolidating each step as far as possible before going on to the next. At the same time it is necessary to avoid drab repetition and to secure interest in training by providing a sufficient variety of different activities. To digress slightly, the most important secret of success in Scouting is to secure and sustain interest by providing variety in one's scheme of work and play.

In utilizing Trails, therefore, it is as necessary to work progressively, to go from stage to stage, and to provide variety.

The most elementary form of a trail is that made by scattering paper on the ground so that those behind can follow, that is to say, a paperchase. I have spent many of the most enjoyable mornings of my life paperchasing but on horseback. The slight tang in the air of the Indian cold weather morning as the sun was rising, the mist that made the first mud wall loom like the side a house, the streak of white paper leading to, and over it, the fidgeting of two score horses between the flags that marked the start, the rush to outstrip the ruck and so get safely over the first jump at the word "Go," are all memories to be preserved. And, despite all that, I must say that a paperchase makes a poor trail for Scouts to follow. The reason is not so much that it is untidy – we should pick up more paper than we throw down – as that observation is more or less at a discount. On foot it is a very simple matter to see the paper, so that speed becomes the only consideration. If a paperchase is used as a physical exercise well and good, utilize it, but you must understand that it has not much use as training in observation.

A further definite stage is reached, however, by the laying of a wool trail. Odds and ends of wool are cut up into pieces two or three inches long and are used in place of paper. Several benefits accrue thereby. By using different colours of wool, separate trails can be used for each Patrol more or less running along the same line and converging on a common point. The wool can be placed on bushes as well as on the ground, and be tied to branches or twigs overhead, thus training in all round observation.

When we come to tracking proper we will not always find all the signs we are following on the ground, so that practice in looking up as well as down is a good thing. If each Patrol is required to

collect the pieces of wool as they go along, then more emphasis can be laid on observation and less on speed, and so the younger, weaker boy is not handicapped.

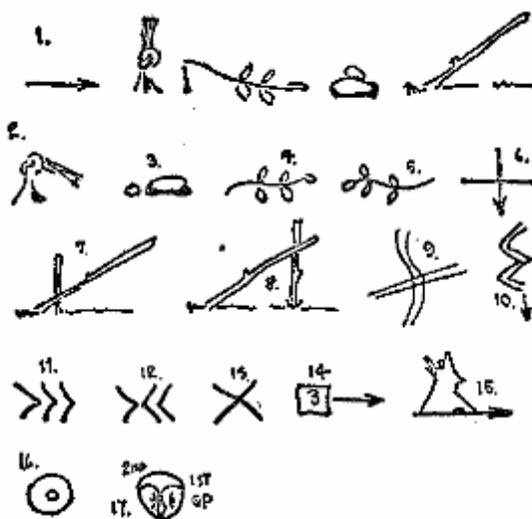
Progressive methods in this kind of trail can be utilised by scattering the wool thick at first, and gradually relocating the number of pieces put down and increasing the interval between each. An important point to remember is that anything strange, say an early flower, can be brought to the notice of those following by laying a piece of wool alongside it.

The next stage, possibly, is the introduction of Scout signs. The signs can be chalked on posts or trees. I must confess that I am not an advocate of the use of chalk to any extent – or made in the dust or mud with a pointed stick or the toe of a shoe. At first the signs should be made at frequent intervals and of large size, and then the distances between each sign should be increased, and their size decreased.

We reach another stage when we make the Scout signs with natural material, such as stones and twigs, and add other signs than those learnt in the Tenderfoot Text, such as war and peace signs.

Tracking irons can be utilized so long as it is clearly understood that they do not leave the trail that the animal himself would make. With the track die of, say, a roedeer you can make a series of marks which it is possible for others to follow, but the marks you make will just be the similitude of the impression made by one foot of the roedeer at odd intervals; you will not be able to imitate the complete track of a real roedeer, because you will not be able to place that die just as the roedeer himself would place each of his feet. In laying a trail with tracking irons it is best to start on easy, soft ground, and work up by degrees to hard, stony ground. In any case the distances between each successive mark should be quite short.

The last stage, so far as our progressive steps are concerned, is the laying of what is known as a nature trail. That is where the Scout in front leaves indications of the direction in which he has gone by tying small bunches of grass together, by breaking a twig, by turning over a leaf, by placing an oak leaf on a holly bush, and so on. It is a difficult trail to follow and should be laid quite short.



SOME NATURE SIGNS

1. Straight on. 2, 4, 6. Turn Right. 3, 5. Turn Left. 7. I have gone a short distance. 8. I have gone a long distance. 9. Ford. 10. Water. 11. Peace. 12. War. 13. No Way. 14. Message. 15. Camp. 16. Home. 17. Signature.

In this last stage especially anyone who is laying a trail for his Scouts to follow would be wise to get a third person to lay it for him and see if he himself could follow it, before setting his Scouts on the job. When you lay a trail yourself it seems quite easy to follow, but when you try to follow a trail laid by someone else it is not nearly such an easy matter! I have lost many Patrols,

and had to scour the country to find them again through setting trails – which were obviously too hard for untrained Scouts.

So far I have just fleetingly mentioned the main stages that might be adopted in the laying of trails, but have not discussed variety. Naturally it is only possible to indicate a few of the varieties that are possible, and to leave it to you, with these suggestions to go upon, to think out others.

Luckily for both you and me, I have been permitted to reproduce an interesting and instructive article that appeared a year or two ago in the Ulster Scout under the title of "Some Unexpected Fun." Here it is:

"When we first started tracking we found it both disappointing and dull. We could not make a success of the tracking irons. We found a small iron cross driven into the bottom of the stave as good as the irons, and not so troublesome or so expensive. Still we found it dull. In our district turnings or cross roads are very far apart, and as we had not then (1908) the use of any place but the roads, we had to tramp a long distance if we wished to include a few turnings. This led us to consider the possibilities of chalk tracking in the town. It proved difficult in a way we had not expected. The town boys soon saw what we were at, and they either rubbed out or altered the signs before the trackers appeared.

"The amusement of the small crowd that used to gather at the corner can easily be imagined. We were made to look very foolish, and we did not like that. But 'he laughs best who laughs last.' Imagine the astonishment of the town boys when they found that by rubbing out the sign they ceased to hold up the trackers! We managed this by making two signs, one as usual at the corner, another some twenty yards down the street to be followed. The latter was made by a second Scout who was more or less unnoticed because of the deliberate fuss made by his chum at the corner.

"Later on we dropped the conventional signs. The town boys saw two Scouts come along, stand at the corner for a time, and then pass on. They were followed later by other Scouts who looked for a sign that apparently was not there. The town boys did not find out for a long time that the first Scouts when standing with their backs to the wall made one, two, or three dots with chalk, meaning turn right, left, or straight on. They were all the more puzzled because the Scout who first saw the sign would go to the opposite corner, call out loudly, 'Here it is!' and then all would bolt off in the opposite and right direction. After this we turned our attention to wool, usually the remains of a ball or an old sock. This we wound round a bit of wood two inches deep, cut it along both sides, and tied into small bundles. At first we used bright colours, and left at least three pieces at each corner. Later we used dull colours, and left only one piece. The town boys rarely found out what we were looking for, and if they did they were unable to interfere.

"But the greatest fun was still to come. Standing at their usual corner, the town boys saw two Scouts come along and pass on without stopping to make any sign. Trackers appeared, found some sign and passed on. The first Scouts had a small paper bag from which they dropped a small quantity of sawdust, or sand, or crushed brick. We had still another method. Two Scouts came along, one apparently looking for something, the other sharpening a small stick. We can excuse the town boys for not finding out that the Scout sharpening the stick was laying the trail with his chips. They did find out that 'A Scout is not a fool!'"

That short article conveys its own lesson, but I will rub in three points. First, difficulties stimulate our imagination and are there just to be overcome. Second, two persons should preferably lay a trail. Third, the signs made should not necessarily attract the attention of anyone but a Scout!

Another variety of trails may be mentioned – Treasure Hunts. Whether there is any treasure at the end of the trail or not, it does not so much matter, the main point is that a certain number of diverse clues have to be followed up. The Treasure Hunt written out as a story is especially valuable, as not only can it lay a trail, but also it can test the trailers by giving them certain activities to do. A story is written round some historical or legendary person and blanks are left on the written page for the trailers to fill in from their own observations. The clues used to indicate the trail can be many and various. In town they can take the form of street names, shop

signs, post pillars, statues, trees, fire plugs. In the country trees, gates, view points, conventional signs, sticks and stones can be used.

There are two points that still need mention, one is the importance of obliterating any marks that are made on the ground or elsewhere when the trail is followed. If left they may mislead other parties, and, if blatantly made, are apt to become an eyesore – and the other that permission should always be obtained when it is desired to lay a trail over private land. Most owners of land will give the necessary permission readily enough, but it may go hard with the trespasser; and quite rightly, too.

There is a great amount of fun to be got out of laying and following different trails, and they have great value in training Scouts to take up the more difficult practices of tracking proper later on.

## CHAPTER X

### TRAINING IN TRACKING

BEFORE going any further it is advisable to refer to the Tracking test for a Second Class Scout. The rule reads that the Tenderfoot must "Follow a track half a mile in twenty-five minutes." Two observation alternatives are provided: "Describe satisfactorily the contents of one shop window out of four, observed for one minute each," and "Kim's Game, to remember sixteen out of twenty-four well-assorted small articles after one minute's observation."

Naturally the wise and thoughtful Scoutmaster will try all the alternative methods of the rule, and many more if necessary. He will look to the spirit of the rule, and utilize the test to found and strengthen the boy's powers of observation. Mention has already been made of the two alternatives, but I have purposely referred to them again in connection with the Tracking test because they give a clue as to what amount of proficiency should be expected in the boy in that test.

If you ask the Tenderfoot to follow the track of a motor-car on a soft dirt road, he will be able to follow it for half a mile with very little difficulty. If you ask him to follow the track of a man across hard, stony ground, he will lose it in under twenty-five yards. Your choice in testing the boy lies somewhere between these two extremes; your choice in training the boy to follow a track will start with something even simpler than the following of the motor-car. The rule purposely gives no definition of the word "track," because local conditions vary so greatly, and there is no intention of hindering the boy or placing obstacles in his way, but every intention of pointing the way to an activity which will be of interest and use to him. For this purpose the various practices in following a trail mentioned in the last chapter are of more value in connection with the Second Class Test than the tracking of men and animals, and a number of the trails indicated there can be used as the "track" for the actual test.

I must quote again from an article in the *Belfast Scout News*:

"One boy may be interested in birds, if so, when in the country, scouting, let him find out all he can about the various birds. Oh yes, but that is going into the Naturalist Badge, you might say. It may be, in a sense, but Tracking does not necessarily mean following anything by marks upon the ground. Birds can be tracked by their calls or by their plumage, and even by marks upon the ground. Take, for instance, the Hawk, you will frequently find the bones and feathers of small birds scattered below trees where it has made its nest. This method will develop both sight and hearing. Scouts interesting themselves in this line should be able in due time to distinguish the different birds by their calls, plumage, and flight. Take another boy who may be desirous of following up animal life. A very pleasant Saturday afternoon may be spent by two boys, or a Patrol, following a stream to its source, or rambling through a glen, noting the footmarks of the

various animals as they go along. Interest will be experienced in finding out to which animal various tracks belong.

“Always keep in view our object to teach the boy how to develop and use his latent power, and to help him until he feels he is taking hold; to show him the beauty of God’s world and his manifold activities in it, to help him to realize his actual unity with God and the universe.”

That quotation puts, more clearly than I could do, what our object should be in connection with the Tracking clause of the Second Class Test. Make use of it to bring on the boy as an individual. Do not lay down any hard and fast rule in the Troop which all Tenderfoots have to follow despite their personal inclinations. Utilize the boys’ own inclinations to lead on to other Tracking practices. Suit the practice and the test to the individual Tenderfoot.

It is this question of individuality which I wish to stress in your further training in Tracking. A certain amount of foundation work will have already been done. You have trained your Scouts in observation, and have founded in them habits of going about, indoors and outdoors, in the town and in the country, with their senses fully alive. Their eyes see what is going on round about them, and take in both objects that are near at hand and objects that are distant. Their ears are open to every strange sound, even amidst the crash and bang of modern urban traffic, their noses are keen to scent the unusual and to detect the difference in smells due to atmospheric changes – for does not the town brewery smell stronger when it is damp? Their hands and feet can be used to feel their way in a fog or in the dark. But they see and hear and smell and feel almost unconsciously, no extra effort being required.

You have trained them to keep their heads, and to keep cool no matter what strange incident occurs. For it is more important that they should have their wits about them in cases of emergency than at any ordinary time.

In stalking practices you have trained them to move quietly, to have an eye for the ground, to study the habits of animals and birds, to keep their senses alert amid strange surroundings, and, which is more difficult, amid ordinary surroundings.

By simple trails you have taught them to follow from one sign to another, to use their ingenuity in marking a trail for others to follow, to overcome difficulties.

Their further training will develop largely on the lines of their individual taste, but, with this foundation to work on, it will be possible for them to take up and master some of the more difficult, more intricate, and yet more interesting phases of Tracking as practised even to-day in the backwoods and deserts and jungles and forests of outlying parts of the world.

In a sense this chapter marks the attainment of an important stage, the practices and training of the Tenderfoot and Second Class Scout have been completed, but not forgotten, and the Scout enters upon a still more adventurous stage and sets out to make himself a Tracker. If he has forgotten his previous training and practice, he will have to start all over again, for without the knowledge and experience that these have given him he will not get far; the marks that are there to see will be neglected; the problem that confronts him will be incapable of solution.

In Rajputana, in India, the professional tracker is known as a *Khoji*. These *Khojis* are illiterate, their knowledge has been handed down from generation to generation; it has not been acquired in a scientific manner, nor can it be passed on or fully explained to an outsider, but they are not born trackers, nor do they become trackers in a week. They go through a long and arduous system of training, not necessarily the best system that can be devised, but certainly a form of training which it will be of use to the Scout to understand. Because not only will he gain an insight into the powers obtainable, but he will also have to undergo a somewhat similar form of training if he is to acquire anything like proficiency in the art of Tracking.

I cannot do better, therefore, than quote a passage from G. W. Gayer’s book on *Foot Prints*. I make no apology for quoting from the writings of others, because I believe it is best to give you the original rather than some half-baked paraphrase of my own. If we can gain from the experience and knowledge of others it is all to the good. We should never be behind-hand in profiting by such knowledge and experience. None of us is so proficient in any one subject that

we cannot learn from other people, and none of us can ever reach such a stage that there is nothing more to be learnt, although some of us may imagine secretly in our hearts that we have reached such a pinnacle!

Gayer writes, then:

“A *Khoji* explained the system of training to the writer thus: – ‘The *Khoji*’s teacher or *Guru* gets some person in the village to leave a clear impression of his naked foot on suitable soil, and carefully protects it by placing an inverted box over it; the pupil is then sent for, and the characteristics of the foot – or its “chin” – are explained to him in detail, and he is set to study the footmark until he thinks he will be able to distinguish it from others; when he feels confident, he is made to cover it again, and told to try and find another impression made by the same foot. When he thinks he has succeeded, he has to confirm his conclusions by referring to the original impression. The conditions are gradually made more difficult until he is able, quickly and certainly, to commit the features to memory, to obliterate the original impression, and, some days later, to commence his search for a corresponding impression; he has then to track the maker to his home. It not infrequently takes years of practice before the *Guru* is satisfied with his pupil, for the latter must finally be able, not only to track down his quarry, but also to say, after studying the track, whether it is that of a man or woman, whether the person is old or young, fat or lean, burdened or unburdened; whether he or she was running, walking fast, walking ordinarily or loitering, and what he or she was probably doing while moving along.’”

The prospect in front of the would-be tracker becomes somewhat alarming when he is confronted with that list of requirements; but in the succeeding chapters I will endeavour to show that it is not so impossible a task as it would seem to make these distinctions, nor to deduce these facts from different tracks with some degree of correctness.

The description of the *Khoji*’s training certainly does support the progressive method of training which Scouting has adopted. If we were to apply that method to our further practice in tracking, it would lead to some such advice as this.

The wise Scouter will start by taking a Patrol, no more, along a road, and let the Scouts study the tracks that are on it. The road must be an ordinary one where there is dust or mud, the tarred, macadamised highway does not show much in the way of tracks. The boys should be asked to say which way that motor was going, what kind of a conveyance made that track, whether these footprints were made by a man, woman or child, how long a time has passed since that old cart horse came down the road.

Only a small portion of the road should be taken, and each Scout should be encouraged to reason for himself. The boys will make many mistakes to start with, one cannot learn without mistakes; but they will get interested and soon learn what to look for. The Scouter should discourage all guessing and wild speculation, and, when any theory is advanced, should ask for the reasons that have led to that theory.

The main point is to let the Scouts find out things for themselves, they have to think for themselves, and not let someone else do the thinking for them. This is the same method to apply to their Scouting in general as to their Tracking.

## CHAPTER XI

### HUMAN FOOTPRINTS

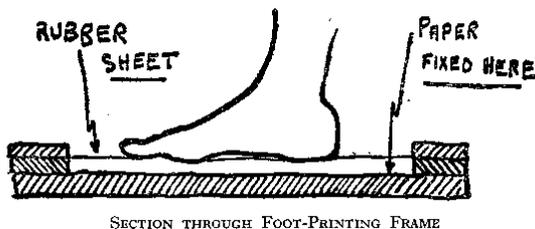
DANIEL DEFOE, who lived two hundred years ago, wrote in *Robinson Crusoe*: “It happened one day, about noon, going toward my boat, I was exceedingly surprised with the print of a man’s naked foot on the shore, which was very plain to be seen in the sand. . . . I went to it again to see if there was any more, and to observe if it might not be my fancy; but there was no room for that, for there was exactly the very print of a foot – toes, heel, and every part of a foot.”

We can see the same effect for ourselves if we step out of the bath on to the floor or on to a cork mat. We might not be so surprised to see it, but we might be surprised to know that on the average two feet in every million *might* be similar.

The study of human footprints is a very interesting one, and is not used so much as it might be for the purpose of observation practices and tracking in general. An evening in winter can very profitably be spent in comparing the footprints made by two different Scouts. All the materials required are some water and a flat surface, for which a floor will suffice.

Good and permanent footprints can be taken by using ordinary printer's ink. The person making the print should step on to a metal slab covered lightly and evenly with ink, and then step on to a piece of white, thick paper stretched on a flat board. It is best then for him to make another step into a bath of turpentine without delay!

Good bootmakers now record a customer's Foot-Chart in the following way. A thin rubber sheet (1/16 inch) is stretched in a frame which resembles a photographic printing frame. Before stretching it in the frame the lower side of the sheet is marked with ordinary "rubber-stamp" ink spread with a rubber roller. The chart is fixed on the bed of the frame which is  $\frac{1}{8}$  in. below the rubber sheet when in position. The customer steps on to the frame in stockinged foot and off again. When he does so the rubber sheet is pressed against the chart below, and leaves a fairly accurate representation of his footprint, while the stocking remains quite unaffected.



A collection of the footprints of each member of the Troop will prove of great interest and afford scope for much comparison and a certain amount of deductive reasoning. Incidentally, but none the less important, such a collection may tell the Scouter that some of his Scouts need more care taken of their feet than is being given them. Some may be flat-footed, some may have deformed feet, some may have other kinds of foot trouble. It is a fact that a great deal of suffering and permanent injury is caused by boys wearing ill-fitting boots, more especially in families where boots are passed down from one to another without any consideration being paid to the fact that the shape of the second wearer's feet may differ entirely from those of the first wearer.

The value of the science of fingerprints has now been accepted, and it is a matter of commonplace knowledge that a man can be traced by his fingerprints, and that the characteristics of these prints remain constant throughout his life. One cannot advance the same claim in regard to footprints with the same degree of accuracy, but there are several instances on record of people being traced by their footprints.

I remember a case of murder in which a footprint was the only clue. The village headman had been brutally murdered. Alongside the body on a clean cloth was a dusty footprint. The man who made the footprint, a close relative, was found some hundred miles away, and the print was the only thing which connected him at all with the crime, which he subsequently admitted.

A real professional tracker learns in time to be able to recognize a person from his foot impression as easily as he can from his face.

In a certain Indian village there was an old Mohammedan who was much respected, and reputed to be both devout and strict in his interpretation of the Mohammedan law and practices. Early one morning the village tracker was wandering idly down the street through the *bazaar*. Half-sleepily he said to himself: "I wonder what Ram Bux," for so we will call the old Mohammedan, "was doing out so late last night." Still half-asleep he wandered on to awake with a start in front of the village wine shop, for he saw that Ram Bux's footprints led therein. "And what is more," he said to himself sorrowfully, "Ram Bux has not only entered the

wine shop, but he has drunk therein, for lo! do I not see his footprints coming forth from the shop like unto those of a drunken man?" And so Ram Bux's prestige was lowered in the eyes of the whole village, for a devout follower of the Prophet does not drink wine.

To show that it is not impossible to distinguish one person's footprint from another I will describe the twelve chief features which go to make up the print made by a human foot. (See p. 73.)

It is difficult to distinguish these features unless there is a fixed axis and perpendicular to guide the eye, and so these have been placed in the illustration. The true axis of the foot is a line that passes through the centre of the heel to the centre of the big toe. From this axis the best perpendicular is the line that just touches the lowest edge of the little toe. As a further help a third line has been drawn from the tip of the big toe to the tip of the little toe.

Having considered the illustration, it is now possible to make an analysis of the particular features. First come the toes. The average person possesses five toes, but I have seen people with three, four and six. Under each toe there is a pad which is the only part of the toe that normally comes into contact with the ground when walking. It can be easily seen how it is possible for the positions of the toes of two different footprints to differ. Some are long; some are short; some are missing in the impression, which is not an infrequent occurrence due to a toe being doubled back by wearing ill-fitting boots. In some cases all three inside toes are above the diagonal line; in some cases one or other or all of them fall on this line. In some cases the second toe is longer than the big toe. In some cases the third toe is furthest from the diagonal line; in other cases the fourth is. In some cases there is a space between the second and third toes, in others there is a larger space between the third and fourth. And so one could go on, but that is sufficient to show the number of different pictures the five toes alone could give.

In order to follow the other distinguishing features it is best to consider the illustration geographically, and to imagine that the axis of the foot lies due north and south, the toes being towards the north.

Behind, and separated from, the impressions of the pads of the toes lies the edge of the impression of the sole of the foot. The only name I know for this line is the Indian trackers' term *zanjeri*, so let us call it the north coast line. Just as one coast line differs from another so does this line in one foot differ from the similar line in another foot. Sometimes there are four convex promontories; sometimes four concave bays. Sometimes there are three promontories, or two; sometimes there are two, or three, bays. Sometimes there is a gradual slope from behind the big toe to the back of the little toe; sometimes there is a sharp descent which runs down below the perpendicular line, and so on.

Keeping to the same terminology, and continuing our travels, we come to the east coast formed by the outer side of the sole of the foot. I trust that it is unnecessary to say that the illustration shows the print of a right foot! Usually this line is fairly straight, but some feet have a bulge towards the north, and others a bulge towards the south. Some even have four slight promontories, some a promontory about midway down the line, and some a shallow curved bay.

And so we travel round to the south cape, which is of course the heel. Here we may find a nice delicate oval cape, or a bluff one; it may be long, or it may be short; it may be pronounced, or it may be rather an indeterminate feature of the landscape.

The west coast has, as a general rule, a longer coast line than the east, for it marks where the inner side of the foot touches the ground. It is noticeable for the great bay caused by the instep. If the foot is properly arched, this bay is deep. If there is a tendency to flat-foot, the bay is correspondingly shallow. Occasionally there is hardly any trace of a bay at all.

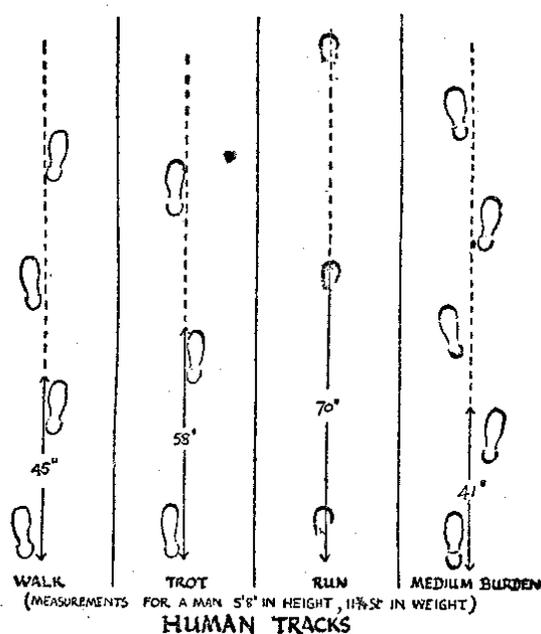
It will be noticed that in the illustration the axis crosses the bay, and the length of this line from shore to shore is an important feature, which together with the five islands lying off the north coast (the toes), and the three coast lines, north, east, and west, and the south cape (the heel), give ten distinctive features. There are still, however, two others given by the impression of the sole of the foot.

One is the mainland, the ball of the foot, which varies greatly in size and shape.

The other is the isthmus that connects the south cape to the mainland, and is formed by that part of the instep which does touch the ground, the western bay being formed by that part of the instep which does not touch the ground. This isthmus can be short and broad, or long and narrow; it can be parallel to the base line, or at an angle to it.

So when we consider these twelve main distinctive features of the human footprint, and the differences that can exist among them, it is more easy to comprehend the possibility of a trained man being able to recognize one person from another by their footprints. If there were only three common types of each of the features, and there was nothing else to go upon, the total possible number of different types has been computed at 531,441!

In point of fact there are more than three common types of each, and these twelve features are not all we have to rely on. Two very important features are given by the length and breadth of the impression, that is, the length of the axis from the tip of the big toe to the back of the heel, and the length of the perpendicular from the outer edge of the little toe to the inner edge of the ball of the foot. It is to be remembered that these measurements will not be the same necessarily as similar measurements of the foot itself, and that it is impossible to compare a footprint with the actual foot; another impression has to be made and compared with the first.



Again many feet have creases, cracks, scars, and other peculiarities that all show in a clear impression, and afford extra evidence for purposes of identification.

When two impressions are being compared with each other in order to find out if both have been made by the same foot, it must be clearly understood that, if they have been made by the same foot, they will agree in all essential points. If there are points of disagreement, and these have not obviously been caused by an irregularity in the ground, then the two impressions cannot be attributed to the same foot, even if they are alike in certain particulars.

It should be obvious too that a man's footprint will not look the same when he has been standing still as it will when he has been walking, but I will leave till later the consideration of that question.

Take for instance the murder of the village headman; when the murderer was traced his connexion with the crime was not clearly established until he had walked unconsciously over a similar cloth placed in a similar position, and under similar conditions in regard to dust, etc. The word unconsciously needs emphasis because a man can alter the appearance of his footprints if he is thinking of what he is doing. A shuffle as he walks, or the placing of the

foot at a different angle to his line of walk, or a slight twist as the foot meets the ground, will make all the difference to the impression his foot makes.

## CHAPTER XII

### BOOTED TRACKS

IN the last chapter we have seen how easy it is to distinguish between the footprints of two different men, provided of course that we have had a considerable amount of training and practice. To a certain extent booted feet have their characteristics too, so far as the impressions they make on the ground are concerned. These characteristics, however, are obviously not so personal since the boot is a covering to, and hides, the real foot within.

The characteristics are more often those of the bootmaker than of the wearer of the boots, but even the latter can have some influence!

The size and shape of the boot determines, but not so often as it should, the length, breadth and make of the boot or shoe worn, so that the length and breadth of the bootmark – the first two features of the booted track – may give some kind of a clue as to the size and bulk of the wearer.

The make of the shoe or boot depends, to a great extent, on the requirements of the wearer. Formerly it was possible to say that those engaged in certain walks of life, such as ploughmen, gardeners, professional men, policemen, had a tendency to adopt footgear which was in a sense characteristic of the profession they had adopted. This is not so true nowadays since boot and shoe factories turn out the same type of footwear for all to wear, the difference mainly lying in the particular mode which the factory affects.

But, be that as it may, the fact remains that there are innumerable kinds of boots and shoes for all occasions – ammunition boots, brogues, light walking shoes, golfing shoes, tennis shoes, football boots, and so on. Apart from the question of size, the pattern of each type of boot varies very considerably, toes may be pointed, or rounded, or square; heels may be low, or high, or non-existent as a separate entity; the soles may be of leather, or rubber, or rope.

The identification of a burglar by his footmark on the border outside the dining-room window is not an impossibility, provided the boots he wore on the night of the burglary can be found. It is obvious that the burglar's feet will not afford much help, because they were camouflaged by the boots he wore, neither will any other pair of boots do, because they may differ in make and shape.

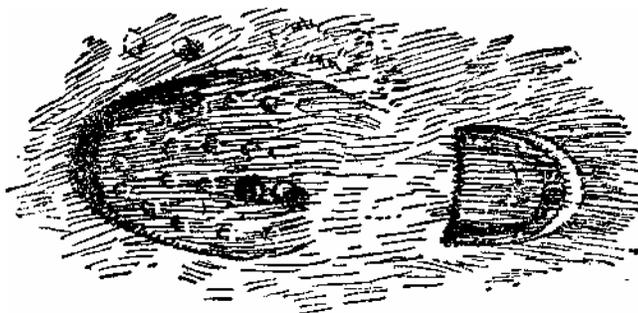
In setting out to compare two bootmarks, attention has to be paid particularly to the following points:

- 1) Length of bootmark from heel to toe;
- 2) Breadth of the sole at its broadest point;
- 3) Length of the heel from the front edge behind the instep to the back of the heel;
- 4) Breadth of the heel;
- 5) Height of heel, if on soft soil;
- 6) Number, shape and position of nails, if any;
- 7) Any distinctive marks made by the sole, or heel;
- 8) And, if there is a succession of footmarks, length of stride from the toe of one footmark to the back of the heel of the next successive footmark.

If it is possible to compare two footmarks side by side, well and good, the task is simplified to a considerable degree. If not, a sketch of each bootmark should be made, somewhat as illustrated, and the measurements carefully noted down.

It is not necessary to comment on the first -four of the points to be noted, or the last; careful measurement is all that is required. The fifth point will be more difficult to decide, and will depend very considerably on the type of soil. If it is not possible to have the two

impressions being compared on similar ground, then this point should be omitted. It will have considerably more bearing in any case in the footmarks made by a woman than of those made by a man. The sixth point is very important, as the Chief Scout exemplifies in his yarn of the Elsdon Murder in *Scouting for Boys*. The seventh point deserves a certain amount of comment.



SKETCH OF BOOTMARK

In addition to nails, of different kinds and patterns, the sole of the boot may have a characteristic appearance by reason of other protective materials that have been added to it. Some of these may be mentioned, as, for instance, metal protectors at toe or heel, rubber heels and rubber soles. The soles of the boots may be new, so that the edges are clear cut, or they may be worn, usually more markedly in certain parts, especially the outer part of the back of the heel. Now and then there may be leather patches on the sole, or worn parts that have not been patched, which on favourable ground will leave a distinctive mark.

In dealing with footprints mention was made of the impossibility of comparing a footprint with the foot that made it; this is just as true, of course, of a footmark made by a booted foot. There is not much good in comparing the boot with the mark, although if there is a particular nail missing it may help to confirm a previous suspicion. A mark will have to be made with the boot. Sometimes the boot is taken and pressed down with the hand into the ground. This may lead to a false mark. If the owner of the boot is not available, someone else of a similar height and weight should put on the boot and make a mark on the ground with it under similar conditions to those that existed when the first mark was made. Then there is some reasonable chance of making a proper comparison.

In no case should the boot be fitted over the first footmark. This is a common mistake, although it seems an obvious one. If the boot actually made the mark, all that is known is that it appears to be of the same shape and size as the boot that made the original; other characteristics have not been compared and the original mark has been obliterated by the second. If it is a different boot altogether, then the original mark has been obliterated and nothing at all gained, except that it was not the second boot that was responsible, a somewhat wasteful method of elimination!

When a single impression, or a series of impressions for that matter, have been found at the scene of some crime, it would be well worth while to get an experienced bootmaker to look at it, or to make a good sketch of it. In his profession he will have studied footwear and the human foot to a greater or lesser degree, and will be able to give some advice, possibly, as to the wearer. If the mark shows signs of the boot that made it having been unevenly worn, he may be able to say whether that wearing has been caused by any peculiarity of walk. More remotely, he will be able to identify the kind of boot, or even to say in what locality such boots are worn or made.

If the mark has been, made by a rubber-soled shoe, ordinary rubber not crepe, it is possible to identify the particular make of shoe by the pattern of the sole, in the same way as it is possible to identify the make of tyre in the track of a motor-car or bicycle.

One very obvious classification of boots and shoes has only been hinted at, and that is the difference between men's footwear and women's. Even in these modern times when there are signs that women's shoes are becoming more rational and more adaptable to the work that is required of them, it is a very easy matter to identify the track of a woman's shoe from that of a man's.

As the woman's foot is narrower, so is her shoe.

Wordsworth applies his powers in the right way in *Lucy Gray*:

Then downwards from the steep hill's edge  
They tracked the footmarks small.

The heel, even when low, is of a smaller size, and the instep is usually more marked. The toe is more pointed and usually more deeply impressed. The length of the impression is ordinarily shorter, but that is not so good a distinction as the breadth. The difference between the woman's footmark and that of a boy usually turns on the question of breadth, and sometimes on the depth of the impression, that of the younger boy being more shallow. High heels have tended to make women walk with their toes more turned out, but that is a characteristic which should really be dealt with in another chapter.

As is obvious, a certain amount of study is required before one can hope to be able to make anything out of these few hints on the subject of booted tracks. It is suggested in *Scouting for Boys* that each Scout should take his boot off and draw a diagram of it on paper, putting in all nails and other characteristics. By this means the main features of the sole of a boot are impressed upon him. I will only mention a couple of other practices, both of which are old and well known.

The Scouts may be given five minutes or more to memorize the look of the soles of the boots worn by a Patrol. All that is required is for the Scouts to sit on the floor with their legs straight out in front of them so that the soles of their boots show. The Patrol is then taken and placed behind a screen or sheet under which the soles of their feet only project. Their order is naturally upset from formerly, and the other Patrols are asked, as an inter-Patrol competition or otherwise, to name the Scouts in the order in which they are now sitting.

As proficiency is gained, the game is made harder when all the Scouts in the Troop sit in a circle and all their feet are inspected, and then each Patrol in turn goes behind the screen. It becomes harder still when only the feet of one Scout at a time projects under the screen, because then all comparisons are done away with, and although Billy may have the largest boots in the Elephant Patrol, and so be easy to identify when the rest of his Patrol are with him, it is not so easy to say that his are the largest boots when they stand on their own, so to speak.

After similar preliminaries to the above, the Scouter can surreptitiously get one Scout only in the Troop to make his footmark on some ground outside or in a sand box and allow each Patrol the same period of time in which to try and identify the maker. Care has to be taken that the maker of the track plays up properly and does not give himself away to his own Patrol or to another. From these two standard games it is possible to introduce others by slight variations and additions.

It will be found that in games of this nature difficulty is experienced at first in the thought transference that is required to identify the negative of a footmark with the positive of the boot that made it. It is hard to grasp, apparently, without practice that when you see a patch on the right of the sole of the boot as you look at it, that patch will be indicated on the left side of the impression made by the boot. In the same way it is hard for many boys to grasp why the east and west points on a star map appear to have changed places, and, when the reason is explained, to prevent the question: "But why are the north and south points not changed over too?"

## CHAPTER XIII

### HUMAN TRACKS – GENERAL CLASSIFICATIONS

WE have considered the single impressions made by a human being whether barefoot or booted, and have now to consider the varieties of tracks which he may leave upon the ground.

A slow-motion picture can show you the movements which a man makes in walking, and such a picture would be of the greatest use in the consideration of the scientific side of the art of tracking. The muscular motions which propel a man forward have their counterpart in the track that he leaves on the ground. I trust I may be pardoned if I make more than a passing reference to the forces which he exerts in order to make a step forward, because that is how a track is made.

When a man standing desires to move forward he leans slightly forward so as to throw his centre of gravity in the direction in which he intends to go. As he does this he commences to bend the knee of the leg he intends to move forward first. To avoid complications we will assume that he intends to step off with the left leg as is usual. He bends the left knee, and, at practically the same time, in order to relieve the ankle, he raises the left heel from the ground. As the leg moves forward the whole of the sole of the foot leaves the ground, the toe being the last to lose contact. At the same time he leans slightly over to the right, throwing his weight gradually on to the right leg and foot, until they bear the full weight of his body. The right foot is flat on the ground, and the weight of the body distributed equally along the length of the sole from heel to toe. The left leg is advanced and simultaneously the centre of gravity is thrown farther forward; when there is danger of equilibrium being lost, the left leg straightens out and the left heel touches the ground. In the meantime the right leg is bent at the knee, the right heel is forced to leave the ground, with the result that the weight of the body is borne on the back of the left heel and the front of the right toe, the centre of gravity of the body being swung forward and to the left by the push of the right toe.

The direction of this force causes the man to strike the ground with the outer side of the back of the heel, which goes downwards and forwards into the ground, pushing the soil, if soft, in front of it. This soil is gradually forced down and forward as the left foot comes to the ground from heel to toe. Before the right toe leaves the ground it gives a final push towards the left foot, which has the effect of pushing the soil away in a contrary direction.

All the weight is then borne on the left foot and the right swings forward causing the centre of gravity again to change direction towards the right. The effect of this change of direction is to cause the left foot to exert pressure similarly. When the heel touched the ground it pushed the soil forward and slightly outwards, then it pressed it straight down as the pressure passed directly above it, and now it presses it to the rear and outwards as the left heel begins to lift for its second step. This roll of the foot is what makes the impression of the foot broader than the foot itself actually is.

I have tried to make this description as short and as simple as possible: the whole action of the foot is minutely described in G. W. Gayer's *Foot Prints*. The reason I give it at all is that this study tells us where to look for the most marked impressions of the foot on the ground. The two most marked are those made by the outer side of the back of the heel and the inner side of the toe. The next two are those made by the ball of the foot behind the big toe and by the outer side of the foot behind the little toe. Then there is a small heap of soil thrown forward by the back edge of the heel and pressed down by the flat of the heel, and a certain amount of soil thrown back by the toe and not pressed down.

Two important points arise. On hard ground there may be no other mark left on the ground except where the heel first struck the ground and where the toe last left it; the faster a man walks the more will soil be displaced by the toe, and that soil will be loose.

It will be noticed that in the ordinary walk the heel meets the ground first, and similarly it will be found that in the ordinary walk the toes point slightly outward, following the direction of the thrust made by the opposite foot. I have emphasized "ordinary" because if

a person is thinking about style and so on he will tend to do things that he would not ordinarily do and the track he makes will not be characteristic of him. I will try and discuss a few departures from the ordinary in the next chapter.

We have now the ordinary marks left by an average man at an ordinary walk. The relationship of the left footmark to the right will vary according to the man. The distance between each footmark will be slightly over thirty inches. If a string were taken and stretched along the centre of the line of walk, it would pass over both heels, but the left toes would fall to the left of it, and the right toes to the right.

If the walk were slower, more balance would be required; it is just the same on one's feet as on a bicycle, and so the heels would lie more off the centre line to the left and right respectively, the slower the walk the more would there be a tendency to place them wider apart.

If the walk were faster, the heels would be more centrally planted, and there would be a tendency for the toes to point straighter forward. This question has been discussed in Stalking, but it is interesting to notice that Nature itself tends to teach us that, if we want to walk quickly, we have to point our feet straight. Mention has already been made of the tendency to push more soil back with the toe at a faster walk.

In walking up a slope, the heel strikes less and less deeply as the hill gets steeper, because when the foot is brought to the ground the leg is bent at the knee. There is also a tendency to walk with the toes pointing straighter forward. In walking down a slope at an ordinary pace the feet are kept practically straight, but more flat to the ground so that the toe and the back of the heel strike less deeply than when walking on the level. In hurrying down a slope, however, the heels are stuck sharply into the ground to act as brakes, and the paces are considerably longer.

We have devoted a considerable amount of space to the consideration of the track of a man walking, but the tracks left by a man at other speeds can be disposed of more speedily!

When a man trots he merely speeds up his walk, so to speak, and the track he leaves is speeded up accordingly. The same characteristics in regard to the parts of the print most marked, and the soil pressed forward or back, will be present, but to a marked degree. The distance between each step will be lengthened, and as he has more balance because he is going faster, there will be a tendency for the marks to be in a straighter line. It is to be noticed that the impressions of the toes will be deeper and that of the heels correspondingly lighter, but in soft soil the marks of the heels will be easily apparent.

When a man runs there is a great divergence of track according as to whether he has been trained to run fast or not.

A trained runner sprinting will bring the ball of his foot only to the ground and thrust off with his toes. He leaves no mark of his heels, his paces are much longer than at a trot, and the marks left by his toes, with their marked backward push, will show in a straight line.

An untrained man running fast will probably show a different kind of track altogether. It is quite possible that he will bring his heel down to the ground first in the same way as in walking only with increased force, his feet tend to point out again as in walking and the line of his track will not be so straight.

This untrained man is exaggerated in what is known as "panic flight," to which even a trained runner is prone in times of danger. Invariably when the hero of a tale is flying for his life from a rogue elephant, he has never run so fast in his life before. From personal observation, and, I might add, experience, I don't believe it. In "panic flight" there is more than a tendency to forget training, with the seemingly inevitable result that the toes point out, the heels come to the ground, the line of flight is by no means straight, and the track itself shows a picture of which the painter would not be so proud if he surveyed it at his leisure afterwards.

We may call the walk, the trot, and the run, the three main gaits which the human animal adopts, but for the purposes of the general classification of human tracks I propose to add three more series of tracks, those made by a man walking backwards, by a man who is carrying a burden, and by a man who is exhausted. The tracks made by men suffering from some

physical infirmity or other fall more properly into some peculiar characteristics and so will be dealt with in the next chapter.

In old times, according to the many stories that are handed down, thieves and other miscreants used to make a habit of walking backwards in order to throw their pursuers off the track. Possibly their pursuers were men of very small intelligence, otherwise the trick would not have come off very often. The differences between the track of a man walking forward and of a man walking backward are sufficiently striking to attract the attention of a veritable novice in the art of tracking.

The movements set up by a man walking ordinarily have been fully described, and it stands to reason that if he is going to reverse the direction of these movements that the effect of them on the ground will also be reversed. This is, of course, precisely what happens. Instead of pushing off from his toe at each step he pushes off from his heel. Instead of his feet first striking the ground at the completion of each step, his toe does. The mark he makes on the ground shows then a push back from the heel and no push back from the toe. Usually, too, the steps are shorter, the line of walk is uncertain, the toes may turn in, and there may be a shuffle of the soil in a backward direction from toe to heel.

Sometimes, however, in order to deceive his pursuers, a man may tie a pair of shoes on to his feet backwards. In this case the length of pace and the line of march may be more or less ordinary, but any earth thrown forward by the reversed toe will be trodden down and the earth thrown back by the reversed heel will not be pressed down.

If a man is carrying a burden he has to propel himself forward and in addition the extra weight he is carrying. If the burden is very heavy his balance is affected. So we get these characteristics: the steps are shorter, the feet are planted wider apart laterally, the line of march is uncertain, and the indentations are deeper than they would ordinarily be, especially at the toe. The only real difficulty that arises is to identify the track from that of a large, heavy man, and the shorter steps and uncertainty of line are the more likely to afford the clue.

If a man is exhausted, he has not the control over his legs that he ordinarily has. Anyone who has run a gruelling race realizes this fact to the full. Those who haven't, have probably seen such a race run, and have noticed how the runners staggered off the track at the post. The track gives a true picture of the extent of the exhaustion. The marks left on the ground show that the feet have strayed far from a central well-balanced line, the feet are inclined to cross over each other, the line of advance is very uncertain, the outer edges of each impression are deeply indented, there is no cleanness or definite pattern in the track as a whole, it just shambles about.

Some such similar track may lead to entirely different explanations than that the man was exhausted or wounded, but of that more anon.

## CHAPTER XIV

### HUMAN TRACKS – PECULIAR CHARACTERISTICS

FROM a series of tracks it is possible for a trained tracker to deduce quite a number of facts regarding the person who made the tracks. In dealing with the human footprint it was mentioned that it was possible for the trained man to distinguish a person from his tracks as readily as from his face. In this case the person was known and his tracks were known, and the recognition consisted in remembering the characteristics of the track in conjunction with the identity of the person who made them.

A tracker employed by a police officer in India could, by studying the ground at his master's gate, tell which of the servants had gone in and out that day; for in a few days he was familiar with the characteristics of the feet and boots of each member of the household.

That is a comparatively easy matter, but a further stage is reached when the tracker on seeing an *unknown* track can tell from looking at it the sex of the person who made it,

height, build and weight, class, physical condition, and possibly character. His accuracy will, of course, depend upon his proficiency and practice, but such deductions are within the bounds of reason and of fact.

The influence that the sex of the person making a track has on the track itself has already been alluded to in discussing the difference between the size and shape of the shoes worn by the average man and the average woman: These differences are also noticeable in the bare footprint. Apart from the size and shape of the impressions made, it will be found that the length of stride of a man is ordinarily appreciably greater than that of a woman. The depth of the impression of a woman's foot is also less than that of a man, on account of the lighter weight, but women wearing shoes usually leave a fairly deep impression of the heel on account of its smaller surface area.

The same differences, to a lesser degree, are noticeable in the children of either sex.

It is with some hesitation that I mention another point of difference between the track of a man and a woman, because later on this difference will serve as a clue in the deduction of character! The difference is that apparently women turn their toes out more when they walk than men do. I have already said that this may be due to the practice of wearing high heels, but in some places, especially on the continent, girls are taught to point their toes out when they walk.

Height can be deduced tolerably easy from the length of stride and from the length of the footmark. A tall person is supposed to take a longer stride than a short person (not a very reliable point this) and his foot is generally considerably longer. A properly proportioned man, if there is such a person in reality, can be built up from the length of his foot somewhat in a similar way to the method that scientists employ in building up the skeleton and picture of an extinct animal from a fossilized fragment of it. The length of the foot should equal the distance between the point of the elbow and the wrist bone. This portion of the arm bears a certain proportion to the whole length of the arm; the length of the arm bears a certain proportion to the height of the individual. Scientifically the argument is, I believe, recognized as fairly sound; the ordinary professional tracker knows nothing of science, logic or retrospective prophecy; he merely knows these things happen to be so, and he makes his deductions accordingly.

You will remember that in *Scouting for Boys* there is a yarn about the arrest of a native boy by soldiers hunting for one of their comrades who had got lost, because in answer to their queries he asked: "Do you mean a very tall soldier, riding a roan horse that was slightly lame?" They said, "Yes; that was the man. Where did you see him?" The boy replied, "I have not seen him, but I know where he is gone." In this case the boy deduced the height of the soldier from the fact that he had broken a branch from a tree, which would have been out of reach of a man of ordinary height.

I mention this yarn specifically because it is a good illustration of the fact that in deducing anything from a track, it is necessary to look at more than the track on the ground.

Weight can be deduced from the depth of the impression and from the heaviness of the track left. If a clear impression is left on comparatively hard ground, the maker of the track was probably a heavy person. A combination of the characteristics that help in the deduction of height and weight will give an indication as to build, but further characteristics are seen in the case of persons who are stout. They are inclined to plant their feet farther apart to afford them more balance, and, I regret to say, are also inclined to turn their toes outwards.

As I have already mentioned, deductions in regard to class are becoming increasingly difficult now that those employed in various professions no longer adopt styles of footgear peculiar to those professions. Similarly deductions from footmarks that show signs of patches and old footgear are apt to be misleading. On the whole, therefore, I should be very dubious of any deductions in regard to class made even by a trained tracker.

Physical condition has, however, a very considerable effect on a track. It is possible even to tell whether the man making the track is knock-kneed or whether he turns his toes in. In the former case the man walks with his heels apart, so that the right heel will fall a little to the right and the left heel a little to the left of the central line of the track. The inner side of the

back of his heel, and not the outer side, will strike the ground first and leave a correspondingly marked impression. At the same time the toes will be turned slightly out as in the average man's walk. In the latter case the turning in of the toes will be apparent on the ground, and the inner side of the back of the heel will also touch the ground first. Lameness, blindness and age have their tale to tell. A wound, injury or malformation of the leg will frequently entail a difference in the length of step. Usually it will be found that the marks of the feet come in pairs, that is, two footmarks are found fairly close together, then there is a space and another two footmarks are found. It is difficult at first to determine which is the foot that is lame until an analysis has been made of the way in which the lameness affects the man's walking powers. I am forced to disagree in respect to the track of a lame man with the authority which I would otherwise implicitly follow. G. W. Gayer says: "The affected leg takes the shorter step, the sound leg doing the lion's share of the work; and the shorter step is frequently uneven in length, sometimes being longer than at other times."

What we have to consider is what is the work that the sound leg is called upon to do? Surely it has to propel the person forward, and, as it bears the lion's share, it will throw the unsound leg farther forward, that is to say that there is no reason to take the weight of the body off the sound leg sooner than is necessary and in consequence the unsound leg can be carried a full step forward. There is every reason to take the weight of the body off the unsound leg as soon as possible and so the sound leg cannot be carried a full pace forward, but steps short. It is not the leg in the air that matters, but the leg on the ground.

In each pair of footsteps, therefore, the sound foot will ordinarily be the leading foot of the pair.

But lameness will leave other signs, according to the cause of it. If the heel is hurt, its impression will be correspondingly light. If a toe is hurt, its impression will not be so deep as the sound toe. If the leg is stiff, the steps may be of equal length, but there may be signs of the foot brushing into place on the ground, usually from an outward and backward direction.

It is extraordinarily hard to simulate lameness for the purpose of demonstrating a lame track, and in such case the track made is not a true one.

There is always a certain amount of luck in these deductions, and it is inadvisable to be too emphatic in one's opinion, but frequently it comes off! I once hazarded the opinion that a man had something wrong with his knee on seeing the track he left on sand. He confessed to a hockey injury – two years old! In that particular case it was the angle of the foot to the line of march as compared with the other foot that gave a slight clue.

In the track of a blind man the pace is shorter, the line of march is apt to be uncertain, the feet are planted wider apart – the influence of sight on balance has already been mentioned – and there may be marks of a stick, or if the man has not been trained, of some person who is accompanying him or of a dog. It is worth mentioning that a St. Dunstan's man does not show the characteristics of a blind man's track to any marked degree. His training has improved his other senses so that they aid him in his movements. His sense of touch is such that it does not need contact with a thing to warn him, he can sense an obstacle, apparently, before he meets it. In himself he is a constant example of what perseverance and grit can do.

Age influences the walk to a considerable degree. Old people are apt to become infirm on their legs, their powers of balance are lessened, entailing a spreading out of the feet, the line of march is not so straight, and the steps are shorter. It is said that after middle age the older one grows the shorter one's steps are likely to become. In many cases, too, indications of shuffling can be noticed, in this case in the direction the foot would ordinarily be planted.

Physical condition accounts for another peculiar characteristic. In the last chapter the track made by a man who was exhausted was described; a similar track will be found in the case of a man who is inebriated, or who is mentally deficient, or who is merely wool-gathering. The characteristics will be marked or not according to the state of inebriation, but in all these cases the symptoms point to the fact that the person has lost complete control of his legs. It has then to be decided as to why control has been lost, and other signs have to be found before a true deduction can be made.

In the case of Ram Bux, whose sad story I recounted, the sign was that he had entered the wine-shop sober and come out a different being. The deduction may have been false, he might have been knocked on the head inside, but the village tracker was fairly safe to assume that as he had entered the wine-shop he had partaken of wine, for otherwise there was no apparent reason for him to go there unless he hoped to convert the proprietor!

And now in regard to character. I must confess that there is not very much in it for people to be alarmed about. But both in Egypt and in India, and probably in other parts of the world, trained trackers assert that a man who turns his toes out unduly when he walks is apt to depart from the strict truth so that his word is not to be depended upon. Possibly there is something in it! That estimable fellow the backwoodsman points his toes straight forward when he walks and nature tells us to do the same. As a matter of fact very frequently a criminal's track contains one or two almost indeterminate features which lead one to suspect the maker of the track. These features cannot be described in any way, but combined together they leave an impression that there is a kink in the nature of the person who made the marks. Again, a man whose brain is below normal is apt to leave a shambling sort of track, a picture that is not clear cut, a pattern that does not repeat truly right down the line.

It may be argued that all these peculiar characteristics are a matter of conjecture. I have tried so far as I can to avoid any theories that have not been actually found to be true in fact. Naturally I have had to treat each peculiarity in rather a general way, and I cannot frankly say that these peculiarities will be found in every case, nor that the deductions I have made will be correct in every particular, but I can say that in the great majority of cases these things are so.

## CHAPTER XV

### TRACKING AND DEDUCTION

BEFORE going on to discuss the characteristics shown by the tracks of animals I think it is best to pay special attention to the deductive side of tracking. To a certain extent we have seen that it is necessary to exercise one's faculty of deduction as well as one's power of observation in order to determine the condition or speed of a man who made a particular track.

In order to get a proper appreciation of the differences that exist between two tracks it is advantageous, for purposes of practice, that they should be laid out on the ground side by side. Again, it is best to bring all such tracks down to a common level of comparison. In human tracks the unit of comparison ordinarily adopted is that of the ordinary straightforward walk. If this unit is laid out on the ground and another kind of track, say, a trot, laid out alongside it, it is easy to point out the differences between the two, and then from these differences to deduce the fact that in one track a man was proceeding at a walk, and in the other the same man was proceeding at a trot.

So that the observation of the tracks may be made easier it is best to have some kind of ground prepared. Damp sand is probably the best medium that there is for the practice of tracking. Those Troops that are near a sandy sea-shore or a sandy reach of the river, or inland sand pits, are exceedingly lucky, for without the expenditure of much money or time they have at their disposal an excellent tracking ground. But it will be found that a small potato patch, where the soil has been broken up small and carefully raked and smoothed, will show up tracks almost equally well.

As a result of a suggestion made in *The Scouter* some five years ago many Troops have rigged up an indoor sand track for themselves in the form of a wooden tray filled with sand. Others whose Headquarters do not lend themselves to such possibilities have kept a bag or two of sand in the basement, or the coal cellar, and have emptied these on the floor for demonstration purposes, and carefully swept back every particle of sand into the bags when the evening was over. Instead

of sand, sawdust has been tried with success, and it has the advantage of being lighter in weight, but the disadvantage of not showing such a clear impression.

One of the great difficulties of indoor practice, is that the light and shade effects are not the same as those ordinarily found in actual tracking out-of-doors; but it is possible to manipulate the lighting of a room by means of shades and careful placing of lights to overcome the difficulties in observing a track which are caused by several lights casting shadows in different directions.

Whatever the kind of tracking ground the Troop possesses, and a real effort should be made to secure one somehow, it will be of immense help both in training the boys in tracking and in making them keen on the subject. After a certain amount of training has been given in comparisons, it will be possible to set one or two problems of a simple nature on the tracking ground. These problems should, at first, be only tracks, involved or otherwise, that have already been demonstrated, but should gradually become more complicated and introduce strange features, As in setting a trail, however, you should be careful to avoid making the problems too difficult, and so, as before, it is best to get a third person to set the problem and see if you yourself can get anywhere near a solution before inviting your Scouts to deduce what they can from it.

Also you should guard against the common tendency to complicate the solution of what is quite an easy problem by magnifying small marks to undue proportions, and even by deducing things from marks that exist only in the imagination.

Drawings of sand stories, such as have appeared from time to time in *The Scout*, and photographs are also useful for individual work and practice.

I have already mentioned one or two stories which bring out the deductive side of tracking – a very important side from the educational point of view – and other similar stories will be found in *Scouting for Boys*.

In an article published some years back in *The Nineteenth Century Review*, Thomas H. Huxley set out to prove that the rigorous application of the logic of a certain Persian, *Zadig*, to the results of accurate and long-continued observation has founded all those sciences which have been termed historical or palæontological, because these sciences “are retrospectively prophetic and strive towards the reconstruction in human imagination of events which have vanished and ceased to be.” Naturally it was a very learned article! But I have a modern illustration of this reconstruction of events which I am reserving for later use.

The yarn which Huxley took for the foundation of his thesis will be found on p. 70 of *The Wolf Cub's Handbook*. However much we might wish otherwise, *Zadig* as a philosopher, or logician, or tracker, seems to have had no real existence. He appears to have been mostly the product of the imagination of the French writer Voltaire, who published a book concerning him in 1749. The book contains twenty-one tales of which seven only are computed by a German commentator to be original, the others are variously based on *Arabian Nights*, *Gulliver's Travels*, and so on. But investigation into the authenticity of *Zadig* has traced the possible source of the horse story to a Hebrew book, *The Talmud*, written over one thousand six hundred years ago.

As this book contains the two earliest tracking stories that are known to me, I will reproduce them for your benefit.

The first is in the Talmudical book *Sanhedrin*:

“Two men were reduced to slavery on Mount Carmel. Their captor, following behind, overheard one of them telling the other, ‘The camel that went before us is blind of one eye, is laden with two skin bottles, one containing wine and the other oil, and is driven by two men, one an Israelite, and the other a Gentile.’

“‘You stiffnecked people,’ cried the captor, ‘how do you know all this?’ They replied, ‘The grass is nibbled on one side of the road only. The drops of wine on one side are sunk into the ground; whereas the oil drops remain above it. One of the drivers has relieved nature at some distance from the road, the other (according to Gentile indecency) on the road.’”

The second appears in the Talmudical book *Echah Rabba*:

“The story is told of a man who bought a servant to accompany him on his journey home. Having paid the money, he discovered to his dismay that the servant was blind of one eye. ‘Be comforted,’ said the dealer, ‘though he is blind of one eye he can see much better than persons who have two.’ The man departed with his servant. When they had gone a little way, the one-eyed slave said, ‘Master, there is a traveller ahead of us. If we go fast enough we shall overtake him.’ ‘I see no traveller,’ said the master. ‘Nor do I,’ said the slave, ‘but I know that he is just four miles distant.’ ‘Thou art mad,’ said the master, ‘how shouldst thou know what passes at so great a distance, when thou canst scarcely see what lies before thee?’ ‘I am not mad,’ said the slave, ‘yet it is as I said, and, moreover, the traveller is accompanied by an ass, who, like myself, is blind of one eye. She is big with young and is laden with two skin bottles, one of which contains vinegar and the other wine.’ The master, who thought the slave was either insane or making fun of him, was wild with rage.

“They, however, travelled on, and, after a time, overtook the traveller, when the master found that everything was as the slave had predicted, and asked him to explain how he could know all this without seeing.

“The slave replied, ‘Although I have not seen what I described, yet I knew the traveller was four miles ahead of us, for the almost imperceptible impressions of the ass’s hoofs in the road indicated that she was at least that distance or the impressions would have been more distinct, and could not be farther or they would not have been visible. The grass, having been eaten away at one side of the path and not at the other, plainly showed that the ass must have been blind of one eye. Again, the impression which the animal left on the sand when she rested showed clearly that she was with young. Further, the impressions which the liquids made on the sand, some appeared spongy while others were full of small bubbles caused by fermentation. These clearly indicated the nature of the liquids.’”

There is precious little new in the world, and certainly there is nothing new in tracking and deduction that we have to learn, although possibly we might express ourselves a little less frankly than the Hebrew writers of old.

There is little advice that I can give in regard to the deductive side of tracking except the advice practise, and then practise, and again practise. With practice it will be found that accuracy will increase, and that guesswork will diminish. When the previous story is known to someone or other then the deductions can be checked, otherwise they remain unchecked unless it is possible to track down eventually the person or persons who made the marks.

But again Scouts should be encouraged to follow up any tracks they may find when they are out for a walk and try to make out their story from them. Even in the town it is possible to come across tracks on the pavements or roads, if a man or a vehicle has passed through a puddle.

In Payne’s *Description of Ireland*, published in 1590, the following information is given: “If you track any stolen-goodes into any mans land, he must tracke them from him, or answer them within xl daies.” The same custom was formerly observed in India, when every village had its tracker, who was an important village functionary. If a burglary had been committed anywhere, and the burglar’s footsteps had been traced to a neighbouring village, it was the duty of the tracker of that village to take on the job of following the track. If the track left the village, and entered the boundaries of a third village, the job passed on to the third tracker. If the track stopped within the third village, then it was the duty of that village to produce the burglar or to pay compensation. It was a rough and ready, but eminently just way, of dealing with such crimes.

Similarly we can play this as a game. Each Patrol has a clearly defined portion of ground belonging to it. The Scouter gets someone to make a track through all the Patrol allotments. The first Patrol tracks the trail through their “village,” and hands it on to the next Patrol at the boundary, and so on until the track stops, and the man is found, or till the track passes through all the “villages.” The game should be elaborated to suit conditions, and, naturally, other “sign” can be manufactured to make it more interesting.

In modern times the ability to deduce facts correctly from any "sign" that has been noticed is one of the most important qualities in a detective, and a Scout's work and practice in tracking and deduction is very like that of a detective's. Despite what you may read to the contrary, detectives are not born such, they have to make themselves, and go through a pretty stiff course of training both theoretically and practically. Most of them, of course, will have a natural bent that way, but a bent is not sufficient.

However, in the next chapter we will see if we Scouts can learn anything from detectives!

## CHAPTER XVI

### DEDUCTION AND THE DETECTIVE

AS I have already mentioned, we can obtain valuable lessons in observation, deduction and tracking from those whose duty it is to guard the public peace. Naturally we do not desire Scouts to dabble in crime in any shape or form, but when the investigation and detection of crime bring but points that are valuable to us in our training then we should not neglect to make what use of them we can. Apart from that, the natural boy, as the natural man, is interested in detective stories, not so much from the morbid details of the, crime that has been, committed as from the interest that is aroused in piecing it all together step by step afterwards. It is rather like a jig-saw puzzle, a valuable mental test by the way; there is a picture that has been cut into small pieces which are all mixed up, but which have to be put together again. Some of the important pieces may be missing, but, despite that, the investigator tries his utmost to reconstruct the complete picture.

Very small things have frequently led to the detection of a crime. A single foot-print, or a single finger-print, has led to the conviction of a murderer. A wisp of paper fluttering from a window, and bearing marks of having had a roll of coin wrapped in it, has betrayed a counterfeit coiners' factory. A few letters out of line in a typewriter have led to the unmasking of a forger. A casual photograph has led to the tracking down of a disguised anarchist; for frequently the camera can detect flaws to which the human eye is blind. Frost brushed off a gate by someone climbing over it has led to the tracking down of a burglar. There are many more instances of the fact that by noticing a very small thing detectives have unravelled crimes.

Little mannerisms of speech or gesture frequently disclose the profession, and sometimes the identity, of a person who is suspected. A doctor tells me that it is possible to identify a doctor by the fact that when he is handed a glass and a bottle, he will hold the glass between the thumb and first two fingers of the left hand and uncork the bottle with the little finger of the same hand. He desires me to add that the bottle invariably contains medicine, of course! The hands of the engineer, the van driver, the carpenter, the chemist and photographer usually show signs of their owner's profession.

The writers of detective stories frequently make use of these characteristics in unravelling their plots. For instance, in the "Bulldog Drummond" series, the arch villain, Petersen, gives himself away by drumming with the fingers of his left hand on his left knee.

Let me give one concrete illustration of the influence which small things have on the investigation of a crime.

A well-known German Deputy was shot dead by two unknown young men when walking through the woods near Griesbach in Baden. While scouring the country round the scene of the crime, the police noticed a few scraps of paper which had been brought down by a mountain stream, and lodged in one of the crevices of its rocky bed. The fragments were collected and examined. One of them was the edge of a member's card of a professional association in Hamburg. On it was the syllable "ultz" and the number "10," apparently the terminals of a large figure. Reference to the association proved that a certain man named Schultz had been entered on its books under the number 625410.

Another of the scraps of paper had been torn off an addressed envelope, and bore the mutilated names, "lessen," "Maximilia," and "Muenche." The last indicated Munich, the second Maximilian Street, so the postmen whose rounds covered that thoroughfare were asked whether they had ever delivered a letter to a person whose name ended with a "lessen." The postmen at first could not help directly; but one of them mentioned casually that when he was at Mannheim he had come across the name Tilessen. When this name was put to them, several of his colleagues remembered that a certain Tilessen had received letters at Maximilian Street, 33. And thus the two murderers were discovered.

It is a well-known fact that a criminal who lays himself out to commit a crime, and plans it carefully beforehand, very seldom behaves in the same way as an innocent person would do. He likes to work in the dark, he prefers to approach his object by roundabout ways, and he usually prefers to leave the scene of his crime by some unusual path.

The detective, when he arrives on the scene, has to run over the facts of the case as reported to him, and then try to put himself in the criminal's place, to think what he would do under similar circumstances, how he would approach, what road he would have left by, where he would have stood, and so on. When he has done that he has very carefully to examine all those seemingly possible places for traces, so that a scratch or a fingermark does not escape his notice.

In the country the investigation of cases of burglary, for instance, is simplified by the fact that few people are about, and that frequently there will be marks to be found on the ground. In the towns similar cases present greater difficulties. Sometimes a burglar will drop stolen articles on the route he has taken. If a box has been removed containing valuables, usually the box will be found rifled in a gully, or in a field. If more than one has been engaged in the crime this usually marks the spot where the division of the spoil has taken place, and in the country that place will be fruitful of marks.

One Sunday morning the maid at a vicarage observed a strange man near the stable and ordered him off the premises. Later in the day she had occasion again to visit the stable and, on approaching, heard some keys drop and saw a man disappear in the dark. The incident was reported to some Scouts who were camping near by. Two of them went to the stable with a cycle lamp, examined the ground, and discovered fresh footprints, which they followed from the stable to a cottage some five hundred yards away.

They tried the cottage gate, but found it padlocked; at the same time a man in the garden stepped from behind a bush and inquired what they wanted. They asked if he had any eggs to sell, and, on receiving a curt negative reply, returned to the vicarage and gave a description of the man they had seen.

The maid identified him from their description as the man she had spoken to earlier in the day. The police were then informed and they went to the cottage and brought the man to the vicarage, where the maid, without hesitation, was able to identify him.

The Scouts did their job well. They had followed the track they found, were ready with a reply when unexpectedly confronted by the man, and had observed his appearance sufficiently well to have it identified when they reported it. In this case the deductions thereafter were fairly obvious.

There are so many detective stories nowadays that one has to be careful to distinguish the good from the bad if one wants to follow out the Chief's suggestion of reading out a story, and asking the boys afterwards which details suggested certain solutions. Frequently it will be found that the criminal is the person who seems the most unlikely right up to the last chapter. If that is so the book is not a good one for our purpose of following up logical deductions, but is merely written to sustain the interest of the reader to the end. It then becomes a mere story bereft of the mental exercise that Conan Doyle's stories stimulated. Two simple identity and deduction games have been mentioned in the chapter on Observation of the Individual.

The reconstruction of a crime from the "sign" left on the ground, or in a room, is again a good exercise for our deductive faculties, but the setter of the stage should himself have a clear idea of the story he means to convey by the "sign." He can either

take a story he has read and reconstruct the scene from the details given there, or make up a story of his own, but in the latter case he must be careful to see that his story is simple and that the "sign" can be logically accounted for. It is no good just upsetting chairs and throwing matches about anyhow; the scene should be acted in reality, though not to extreme lengths, beforehand.

If you are acting such a scene, you, like the detective, will need to think with the mind of a criminal! He will probably have Come and gone by unfrequented ways, over a field, through a garden, through a hedge, or over a wall, along the top of a wall, or along a roof. Instead of walking boldly up to a door or window, he may have approached cautiously, taken cover behind bushes – a match or two may be found there – taken short, uneven steps, and stopped frequently to listen, or withdrawn in alarm. When he came to a corner, he may have stood there and peered round, he may have gone on hands and knees under a window, or he may have come cautiously close up to a window and peeped in. After the crime he may have jumped down from a window, or off a wall or roof, he may have dashed for cover, changed his boots, even thrown them away. Any of these things might happen. It takes a very bold man to walk calmly up to a door or window, enter a house, and walk calmly away, and, as a rule, criminals are by no means bold men.

In staging crimes of violence a little red ink can work wonders, and greatly add to the stage effects.

Before leaving this subject of crime and the criminal, I should like to repeat in a shortened form a yarn that the Chief Scout tells in his book *Boy Scouts Beyond the Sea*, because it brings out a number of the qualities of the trained police tracker.

A policeman in an up-country station went, unarmed, to arrest a man who was "wanted." The man covered him with his revolver, retreated into the thick bush and escaped. The policeman went back for his arms and for Tiger, his black tracker, and started off in pursuit.

After going over fairly easy ground for ten or twelve miles, they got into a dry, stony district, where the runaway, knowing he would be tracked, had jumped from rock to rock. A nail scratch here, a grain or two of rock freshly broken there, a few rocks leading at easy bounds from one to the other, gave the tracker his line. Then the tracks led into a fencer's camp in the midst of a thick patch of scrub.

Tiger ran round the patch and reported that the runaway was still there, or had changed his boots. He then made a wider cast round and found footmarks going away. He guessed that the runaway had changed his boots in the camp, had walked backwards, and then turned round. Very soon it was noticed that the runaway had got tired of wearing strange boots and had resumed his own again.

At last they came to a river, a hundred miles from where they had started; the footmarks led straight on into the water. Tiger swam across, found no marks on the far side, swam back again, found footmarks heading down stream in the mud near the river's bank, and followed them in the river for three miles, where they turned on to a bush path along which a herd of cattle had recently passed. The man had obviously nipped in ahead of the herd, hoping that they would obliterate his traces, which in fact they did. But the cattle turned off the path, and went down to the river to drink, and Tiger found the runaway's footmarks at the spot leading straight on.

Then they found the tracks were getting very fresh, the earth kicked up was damper than the surrounding ground, the edges of the track were sharp, and not rounded off by sun or wind. They proceeded cautiously. The policeman's rifle rang out before the outlaw's pistol.

The track was over!

## CHAPTER XVII

### THE TRACKS OF BICYCLES, MOTOR-CARS AND OTHER VEHICLES

IN the latter part of December 1921 there appeared in the *Morning Post* several advertisements from cooks, desiring situations.

A chauffeur named Allaway, in private service in Bournemouth, answered three of these by telegram, saying that the advertiser would be met at the Central Station. Two of the women ignored the offer, but the third arrived after dark. She was met by Allaway, who drove her down the main road to a lonely road near Ilford Bridge and there murdered her. Afterwards he drove back along a newly-constructed road to a quarter where traffic was heavy – Fisherman's Walk.

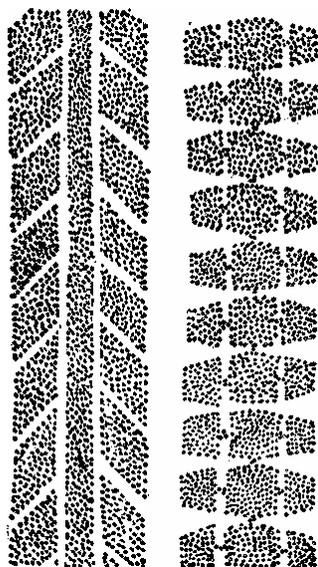
The news of the murder appeared in the evening papers the day after the occurrence. That afternoon, before the evening editions appeared, Allaway drove the wife of his employer to pay a call in Branksome. While she was in the house, Allaway backed the car, in the dark, into some rough ground to turn it. He took the opportunity to throw away the deceased's attaché case, where it remained hidden in the bushes for a week.

Meanwhile Allaway had been arrested for stealing his employer's cheque-book and forging cheques.

The handwriting on the cheques resembled in some respects the handwriting on the telegraph forms, but in the cheques the handwriting was obviously disguised. A search of Allaway's rooms, however, revealed further writing which was stated by an expert to be exactly similar to that on the telegraph forms.

Immediately after the discovery of the murder, the marks of Dunlop Magnum tyres were found on the soft side of the gravel road. The marks were deep, indicating the passage of a heavy car. These marks were tracked for about two miles along a circuitous route to, and along, the newly-constructed road.

Two Types of Dunlop Cord Balloon

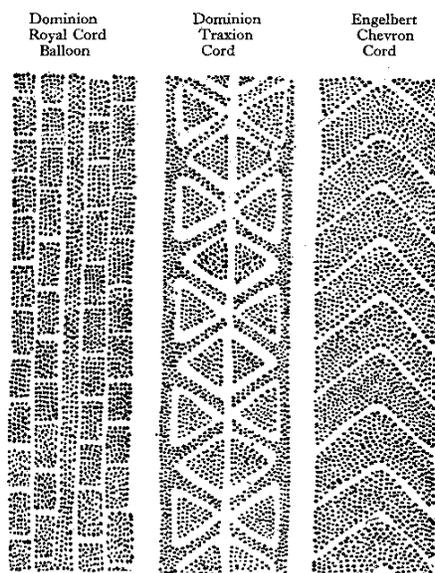


TYPES OF MOTOR TYRE TREADS

The subsequent discovery of the attaché-case, and the marks of similar tyres, at first gave the impression that after the murder the culprit had driven at once to Branksome. No finger-marks were traceable on the attaché-case, as it had lain out in the open for a week.

But it was found that Allaway had bought an evening paper on his return from Branksome, and was seen next morning changing the tyres on the car, and substituting Michelins. The combination of circumstantial evidence led to the conviction of Allaway:

Recognition at the station; the handwriting on the telegrams, cheques and other papers; the discovery of the attache-case; the marks of the tyres both at the scene of the crime and where the attache-case was discovered; the changing of the tyres after the news of the murder had been published.



VARIOUS TYPES OF MOTOR TYRE TREADS

The tracking and tracing of the tyres contributed very largely to the success of the investigation. The actual tracking was a very good piece of work, for it is not easy to track a car along a newly-made road, some time after it has passed.

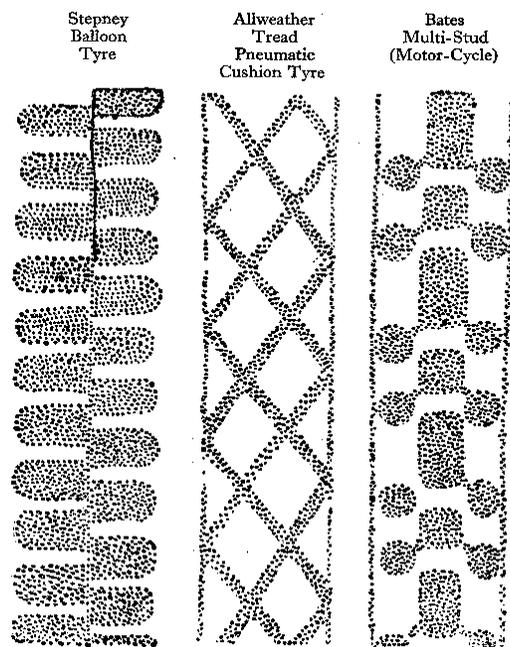
As I have already remarked, it is a useful practice to try to remember the number and make of the cars that pass. If a Scout is in the habit of doing so, he may often be able to give valuable information to the police when they are trying to trace a stolen or wanted car. If an accident has happened, and the driver of the car responsible has been able to get away before you could read his number, there is still a good clue to try and follow, and that is the track made by the tyres. You should remember, too, that the pattern that the tyres have made in the mud or dust is as important, if not more so, than just the rut or mark of the line of flight.

It is difficult for two different cars to leave exactly the same track. The different makes of tyres all have different patterns in their tread. Apart from this, it is possible to distinguish the mark of an old Dunlop, say, from that of a new one, to note cuts or patches on the tread, so that you can recognize the same track if you come across it again elsewhere. Again, a car may have one pattern of tyre on one wheel, another pattern on another, and so on. One tyre may be old, one partly worn, another new. The front wheels may wobble, or one wheel only may be out of alignment.

There is, you can easily see, a lot to be learnt about, and from, the tracks of tyres on the ground.

If you are setting out to follow the track of a car, the first thing you want to decide is the direction in which the car is going. Unless it is proceeding backwards, and that you should easily be able to tell by the uncertain line, the marks of the back tyres will cover or cross the marks made by the front tyres. If the car is known, and the patterns of the tyres known, this may help you in some cases where the pattern of the tread is at an angle to the line of running, as in the case of the Dunlop Cord Balloon illustrated. But you will have to remember that the tyre can sometimes be put on two ways, and that even when a tyre is on, a wheel is sometimes reversed.

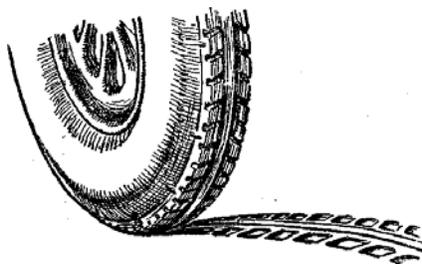
Your clues to direction, therefore, are usually better given by stones and dust and mud. The tendency is for the wheel of a car to push a small stone it runs over slightly forward, and, after pushing over it, to kick it back. If the car goes over a bump, the tyres will momentarily broaden out on the far side of the bump on account of the impact. Dust and mud and water will be thrown outwards and slightly backwards, although in going through a puddle the wheel will push the water forward, and violently so if the car is going fast.



VARIOUS TYPES OF MOTOR TYRE TREADS

Naturally it is very difficult to follow a car track on a smooth, hard-surfaced road, but not impossible, as the Bournemouth Police proved. If the road is damp and there is a tendency in the car to side-slip, the side-slip will show in the direction in which the car is proceeding. There is scope for considerable investigation in the art of side-slipping, but it is a dangerous practice. I have, however, known it purposely done by some men who have had to take their cars into dangerous quarters and who have learnt to side-slip so that they could turn about quicker!

A great deal of what I have said in regard to the patterns on the tyres of motor-cars applies equally to the tyres of bicycles. There is as much variety of design, and as much chance of being able to identify the track of one machine from the track of another. The direction in which the cycle is going is slightly easier to tell. As the rider has only two wheels on which to go, he has to add the complication of balance to his steering. If the rider loses his balance, he has to twist the front wheel suddenly in order to recover it, and then gradually bring the front wheel back to the straight.



DUNLOP CORD BALLOON TYRE AND TRACK MADE BY IT

This will be depicted on the ground; the track of the front wheel will suddenly and abruptly diverge from that of the back wheel, which usually covers it, and will gradually

converge to the central line, leaving a kind of arrow mark made by the tracks of the two wheels pointing in the direction in which the bicycle is going.

If the rider is going fairly fast, dust and small stones will be thrown out in a slightly forward direction. But it is when the track comes to a hill that it is comparatively easy to see in which direction the rider has gone. Uphill he will be labouring on his pedals, his balance will be uncertain and the tracks of the two wheels will not show as a single track but will wobble about. If he is going downhill, the track will be straight, the back tyre covering the front. It is, of course, a matter of balance, and it is just the same when you are on a bicycle as when you are on your feet. The faster you go the easier it is to maintain your balance, and so, in each case, your track will have a more central line and run straighter.

The direction of carts and other vehicles which are not self-propelled can be learnt from the tracks of the animal pulling the cart, or of the Scouts pulling the trek-cart, if these are visible. Otherwise, by walking slowly along the track and looking carefully, you may be able to see a stone, a twig, a piece of straw or some other small, loose object displaced by the wheel. These things are nearly always pushed forward to a noticeable extent. A bump will cause the wheel to leave the same kind of clue as that left by a motor-car. On a damp country road, too, the wheel drags up the earth behind it and forms serrations the shape of which will indicate the direction in which the wheel was moving.

Just as a heavy motor-car will naturally make a heavier impression on the ground, so will a heavier cart leave a deeper rut. Its contents may possibly be discovered, if a sharp look-out is kept on the ground for anything that may have dropped from the cart, and on the trees and hedges for anything that may have been caught up as the cart passed. When hay is being led, you will have noticed how wisps of it are caught up on the hedges, so that a very clear trail is left from the field to the rick.

It is also possible to identify the nature of the particular vehicle that left the track – two-wheeled farm cart, four-wheeled timber wagon, and so on – by the distance apart between the ruts made by the wheels, and by the breadth of each wheel, which differ a good deal according to the particular type of vehicle.

Possibly the most favourable opportunity for seeing vehicle tracks in a town is after a very slight shower of rain when the roadways are only wet in patches some minutes after the shower has passed. But then one has to remember that the roadway is dangerous. Let the tracks be noticed from the pavement, discourage Scouts from rushing into the roadway to look at them, or at the number of a passing car. Not so long ago a rumour arose in London and other large cities that a prize was to be offered to the school child who could jot down the largest number of index numbers of cars that he had noticed. This led to children darting into the street at unexpected moments in order to see more clearly the number of a passing car, with a consequent increase in accidents.

The Scout should be able to see the numbers from the pavement and should have no need of getting into the roadway. If this point has been accepted as a matter of pride, then competition in the Troop to collect numbers can be held. Otherwise such competitions should be taboo.

During the annual camp, however, there are usually opportunities for studying the tracks of carts, and other country vehicles in the vicinity of the farm, just as there are opportunities for studying the tracks of farmyard animals.

## CHAPTER XVIII

### ANIMAL TRACKS – GENERAL CLASSIFICATIONS

IT is always easier to get boys interested in a subject when something that moves is incorporated in it. The models they construct of their own free will are usually working models. Animals interest them because their hunting instincts are awakened. So in tracking they become more interested when it is a question of studying the habits, or following the track of, something that is alive.

So far we have worked through the various stages of Observation, Deduction, and Simple Tracking that lead up to the more difficult stage of Animal Tracking, or Sporing; but we should still be alive to the fact that, in order to get Scouts interested in the subject at all, it may be necessary to begin with the more advanced stage, and start tracking wild things. Even in a town mice, rats, cats and dogs furnish lots of tracks. Hedgehogs are fairly numerous right up to town limits, and leave an interesting and difficult track. Badgers and foxes are not uncommon. Birds are everywhere and leave clear tracks on favourable ground.

It will readily be recognized that the tracking done when we start in the middle will not be so good, or give such good results, as if we had worked right through the preliminary stages. But once a start has been made at any point, and the Scouts have got interested, then it is possible to go back and build up the foundations of the art properly, and to show, by specific example within the knowledge of the Troop, the importance of close observation and reasoned deduction. The common mistake made is that these preliminary stages are left out altogether, with the inevitable result that the Scouts can never attain more than a fixed, and low, standard of ability in their tracking.

In order to be any good at all at the tracking of animals it is necessary to make a somewhat exhaustive study of the various characteristics and habits of the animals whose tracks are likely to be encountered in the neighbourhood, and also to learn to know the form and the track of each animal's foot.

In the theoretical study of the subject we first have to consider the general anatomic make-up of the various classes of animals.

Our first study should be the formation of the foot. I believe that all animals are supposed originally to have possessed five toes, and to have utilized them more or less in the way in which a gorilla uses his to-day. In process of time, however, each type of animal developed different characteristics according to the mode of life it adopted and the locality in which it existed. The formation of the foot changed at the same time to fit in with these characteristics until to-day we have three clearly marked divisions under which the feet of every kind of animal can be classed.

All animals that walk on the flat of the foot are termed Sole-Walkers (plantigrade) and retain more or less the original formation of the foot. The sole-walkers, as a class, are most cosmopolitan. We ourselves are sole-walkers, as I hope you will have realized, and have as our companions such diverse animals as bears, porcupines, hedgehogs, monkeys and gorillas, badgers, otters, hares and rabbits, to mention only a few examples.

Those that walk on their toes, using the Ball of the foot – instead of the flat of the foot and the toes, usually four, are termed Toe-Walkers (digitigrade). Here again we find a somewhat mixed class which includes all the members of both the canine and the feline tribes. Cats and dogs, leopards and jackals, tigers and hyenas are all toe-walkers.

Then there is a third, and large, class of animals that walk on the points of their toes, like ballet dancers. In process of time their toes, or four of them, have grown together until they have become hooves. This class is known as the Nail-Walkers (ungulates) and can, for purposes of comparison or otherwise, be sub-divided into two – animals with a solid hoof, and animals with a cloven hoof. Examples of this class and of its subdivisions are fairly obvious. Horses, mules and zebras, say, are solid-hoofed nail-walkers, while cows, deer, sheep and goats are cloven-hoofed nail-walkers.

There is a very interesting point in connexion with the sub-division of the nail-walkers. All animals that chew the cud have a cloven hoof, and only one single animal that does not chew the cud has a cloven hoof, namely, the pig. By elaborating that one single point it is possible to learn a good deal about the habits of these various animals which led to the formation of the cloven hoof. I once heard an Indian Shikari assert that somewhere behind the Himalayas there lived a goat who did not chew the cud, and, consequently, had a solid hoof. I'm afraid he was romancing, although I wish he had not been, because I have been at pains to try to discover if there was such an animal, and have failed, despite invoking the assistance of the Royal Zoological Society!

And so it is that a single print on the ground may enable the would-be tracker to place the animal that made it in one of the above three classes, but there are other considerations to be taken into account.

An article in the *Canadian Forest and Outdoors* pointed the moral thus:

“The track of the flat-footed bear could not possibly be made by anything that walked on the tips of its toes! Let us suppose that our Tenderfoot sees the track of a sole-walker. He is ‘way up north and, being far from human habitation, knows that it cannot have been made by a dog or a cat. It is long in shape and has the mark of five toes and nails. A bear perhaps! He pursues in haste. Curiosity and excitement banish all fear. With eager eyes he follows the trail and, after miles of tramping, at last reaches the goal to find, alas! that the bear is but a porcupine!”

Our next consideration then is to see whether it is not possible to obtain another anatomic classification.

The build of the animal must obviously have some influence on the way he moves, just as we have seen the build of a man will have an influence on the way he walks. So it is that a further general classification into four classes has been arrived at, and is utilized world-wide.

The first class comprises those animals whose length of body is in correct proportion to their height, and, consequently, whose legs are also proportionate to the body and about equal in length. In this large class are included horses, cattle, deer, canines, felines, etc.

The second class contains animals whose hind legs are much longer than their front legs, such as hares, rabbits, squirrels, kangaroos.

To the third class belong those animals whose legs are short in proportion to their bodies, as otters, weasels, stoats, ferrets, martens, and so on.

The fourth class includes those animals whose legs are very short in proportion to their bodies, and whose bodies are also very fat, badgers, beavers, hedgehogs, porcupines.

It is not so easy to classify every animal accurately in one only of the above classes according to the way it moves. Some animals will show characteristics of gait which appear to belong to two classes. For instance, I can never be quite sure in my own mind if squirrels belong to the second or third class. I have seen some squirrels running by using their back legs as springs which places them in the second class, and at other times moving by a series of leaps from all four feet which would place them in the third class.

There must, it appears, be a certain amount of intermediate classification which is in keeping with the characteristics of locality and livelihood that make for evolution.

The normal walk is the basis of all tracking comparison, whether with human beings or other animals, but in considering the gait of the first class we have also to consider the trot and the gallop of proportionate animals.

It will make it easier to follow if we take a particular animal and study the way he moves. The horse is a common, and possibly the best, example, as we can in actual practice see for ourselves how he moves. If we hear of a slow-motion picture of the movements of any animal being shown at the local cinema, we should always make a point of going to see it. We will then be able to follow the order and way in which the animal lifts and places his legs much more clearly than we would in actual life.

When a horse walks it plants its feet diagonally. If the near (right) fore foot touches the ground first, the off (left) hind foot is placed next, then the off fore foot, and lastly the near

hind foot. Thus it moves all four feet one after another, so that four footfalls may be heard, but it does not move the two on the same side one after the other. All the animals in this class move in this way, except the camel. The normal camel, by that I mean the camel that has not been specially trained for riding purposes, does not move diagonally, but lifts its feet in the following rotation: near fore, near hind, off fore, off hind. It is this method of progression that sets up a swaying movement from side to side that proves very inconvenient – sometimes disastrously so – to the rider. Mention might also be made of the giraffe as an exception, but he is a very intermediate animal!

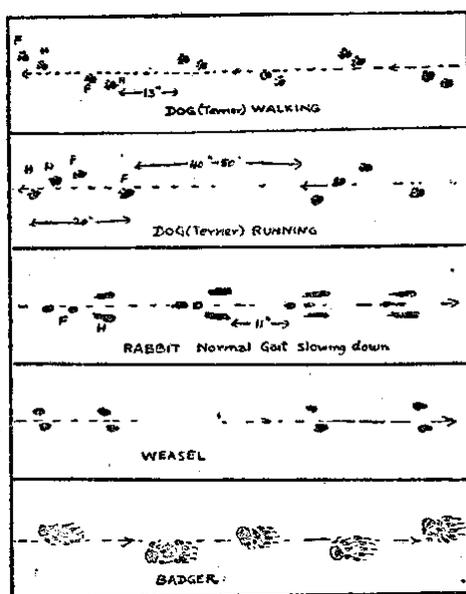
The track left by the horse at a walk differs naturally somewhat according to the individual. The hind hoof registers either just behind, or over, or just in front of the mark made by the fore hoof. In a heavy horse, such as a cart-horse, the hind hoof will show behind the fore hoof, whereas in a light riding-horse the hind hoof will be in front of the fore hoof. A great deal also depends upon the speed at which the animal is walking.

The trot is merely a hastened walk, and the gait is just the same but quicker. The feet touch the ground in the same rotation, but as two feet touch the ground almost at the same time only the noise of two footfalls will be heard. The track itself appears more in a straight line because the animal has more balance, in consequence of speed, and also tries to plant the feet more under the centre of the body to prevent any swaying motion from side to side that may be set up. The mark of the hind foot will almost invariably show in front of the mark of the fore foot, and the distance between paces will obviously be greater.

There are exceptions in the horse to this trotting gait. The trotting horse that is trained for racing moves both feet on the same side more or less together, but it is trained to do so by having a strap tied between the two which forces it to move the corresponding hind foot whenever it moves the fore foot. In India and Africa there are native ponies which are apparently born with a curious double shuffle sort of gait in addition to the ordinary trot. It may have been ingrained in them hereditarily after much practice. The gait is a very comfortable one indeed for riding.

The gallop is a series of leaps. The hind legs serve mainly to propel the animal forward and the fore legs to balance or brace the body. For this reason the hind legs are planted more or less side by side, while the fore legs are planted apart from, and one behind, each other. The resultant track is somewhat like a magnified rabbit's track, for, owing to the speed at which the animal is moving, the hind hoofs hit the ground well in front of the fore hoofs.

The canter of the horse is not a natural gait, and so we need not consider it in reference to the track characteristics of the class of proportionate animals.



DIFFERENT GAITS

There is only one kind of movement in the members of the second class, although, naturally, speed will differ, and so make some slight difference in the track. Animals whose hind legs are longer than their fore legs progress by a kind of leap-frog movement rather in the same way as a horse moves at a gallop. The hind feet come round the fore legs and are thrown ahead of the fore feet. In this class of animals the hind feet are longer than the fore feet and can be easily distinguished. In the three other classes the hind feet are smaller than the fore feet. These points have to be borne in mind if you hope to *follow* a trail.

The jump made by members of the third class (long bodies, short legs) is a curious loping, snake-like movement, and is the one usual gait. The movement is rather like that of a porpoise in the water – a series of curves. The two fore feet leave the ground, and come down together side by side, the animal's body doubles up like a drawn bow, and the hind feet follow, landing almost directly on the same spot, while the fore feet go off on the next bound, so that the trail shows apparently one pair of tracks side by side at regular intervals. Occasionally some of the animals in this class will make short bounds with all four feet at the same time. At a faster pace the hind feet may seemingly outstrip the fore feet and land in front of them.

Since the animals of the fourth class are exceedingly corpulent they seldom hurry. They usually walk, or rather waddle, turning their hind feet in to a marked degree and spreading all four feet out wide apart laterally. As a general rule the hind foot registers over the mark of the fore foot and across it, heels out, toes in. Occasionally, when alarmed, they will leap, but, because of their bulk, the distance between successive tracks is short.

It will be realized that these two classifications cannot be called exactly scientific; but they are classifications that have been adopted, and utilized, in all continents, so as, by a process of elimination, to narrow down the possibilities of the identity of any one track that is noticed. They are helpful, too, as throwing a light on the characteristics and habits of the animal, a very important point in animal sporing. But in order to be quite certain as to the identity of any particular animal's track a considerable amount of practice is necessary, as well as an intimate knowledge of the class of animal, and any characteristics of a special kind that his track may show.

## CHAPTER XIX

### ANIMAL TRACKS – PECULIAR CHARACTERISTICS

ANIMALS, like human beings, have individual characteristics when moving unconcernedly, that is, at their ordinary pace. These characteristics vary between one type of animal and another, and also between two different animals of the same type.

On the stations of Queensland the bushmen are born and bred to their work. When they want to fetch horses in from any of the large paddocks, they use their wits to deduce where the special horse they want will be found. They know that at certain times of the day the horses will be feeding at some special part of the paddock, whereas in the morning they will be sure to go to water.

A thirteen-year-old boy was sent out one morning to fetch in a certain horse from the paddock. The paddock was about four or five miles square. He came back at lunch-time and said the horse was not in the paddock. There were about one hundred and seventy other horses there, but he was sure the particular horse wanted was not among them. He had looked through the various groups of horses, and had looked at the tracks on the ground, and knew the horse was not there, as its tracks were not to be seen anywhere in the paddock. The horse was found eventually in another paddock!

So that even with a solid-hoofed animal it is possible to distinguish the track of one from that of another. If a horse is shod, it is usually easier still, because as a general rule the shoe is made to fit the particular horse, and there are differences in length, breadth, nails, etc.

In all animals the length of stride and the positions in which the feet are placed in relation to each other are identifying marks. In the case of cloven-hoofed animals the splitting of the hoof, and the shape of the two halves of the hoof, are also points which may help the tracker to identify the spoor of an animal after it has been lost.

A couple of tales in connexion with the tracking of stolen camels are told in *Scouting for Boys*. In the one case the track was lost and afterwards picked up again, and in the other, the tracker remembered the track of the stolen camel for a year, and after that length of time recovered it.

The split in the hoof in most cloven-hoofed animals varies according to age, sex and so on. In cattle there is a general tendency for the hoof to open out more at the toe than at the heel in full-grown animals, while in immature animals the tendency is for the split to be wider at the heel. Again, ordinarily speaking, the male has a squarer toe than the female, just as in human beings. The two halves of the foot are not uniform in shape and size, and the difference between the two is an important clue for the purpose of identification.

It is impossible to give indications by which you will be able to distinguish the track of one animal in any particular class from another animal in the same class. I can only give one or two general ideas as examples.

Cattle, sheep and pigs leave tracks in two parallel lines, one on each side of the central line of the track. The impressions of all four feet are clearly seen. The sheep has a smallish, pointed hoof; the pig, on soft ground, shows the marks of the dew claws behind the marks of the hooves; the goat usually places its hind feet well in front of its fore, and has a more irregular cleft.

In most kinds of deer the tracks register, that is, the marks of the fore feet are covered by the marks of the hind, but a deer track will show the condition of the animal to a great extent. The doe nearly always registers; when heavy in young the feet will be spread wider apart laterally. The buck varies according to the season. When full of strength in the early spring its hind feet will overstep the marks made by the fore feet. As the rutting season progresses they will drop back and register; and when he is worn out and out of condition it will be found that the hind feet lag behind the fore feet.



Spoor of (1) Bullock. (2) Pig. (3) Sheep. (4) Deer. Reduced to ½ size.

The Canadian moose and caribou have each peculiar characteristics as regards their track. For his size the moose has a small, sharp hoof, which is apt to sink through the snow, so that

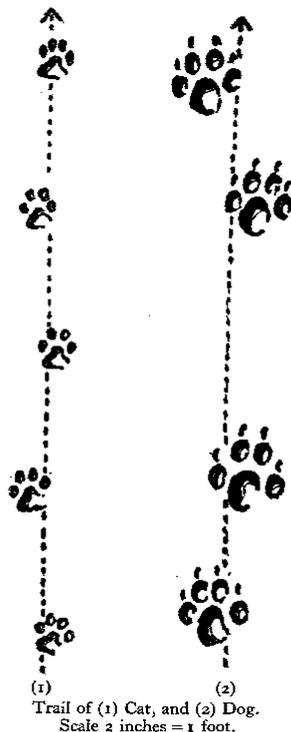
in winter he generally confines himself to a single tract of ground. The caribou has a smaller hoof, but not in proportion to its smaller bulk; the hoof spreads out, like a camel's, and prevents it from sinking so much into the snow, so that in deep snow he can travel more or less as he pleases. The uncle I have already quoted notes in his papers:

"Caribou on the march, from one part of the forest, or from one feeding ground to another, always go in Indian file – each stepping exactly in the footsteps of the leader – so that, if you come upon a track where perhaps thirty have passed, you would, until you have been *educated*, think that only one caribou had passed along.

"The Indian hunter, however, knows better, and from the depth of the footmark and numerous other signs will tell you, with wonderful accuracy, how many there are in the herd, the pace they were going, the number of minutes, hours, or days since they passed."

The toe-walkers comprise the two great tribes of canines and felines, and a comparison of the track of the dog with that of the cat brings out an extraordinary number of differences. These differences are entirely due to the characteristics of the two different types of animals, and these characteristics arise out of the mode of life that they adopted in the past, and out of the locality in which they were accustomed to live.

The dog leaves a zig-zag track, like the horse, with the marks of all four feet showing in two parallel lines. Through domestication it has become lazy so that it does not always show a true, clear track, but frequently leaves a lopsided, irregular one. In any case the marks of the nails can be seen. In days of yore the dog in its wild state hunted for its food, as its wild cousins the wolves do to this day. He hunted by speed over the deserts and plains. His claws are used to protect his soft pads from contact with the hard ground, and speed was his only object, so that he planted his feet anywhere that was convenient, without worrying to any extent about the noise he was likely to make.



The cat leaves a comparatively straight track which shows only one line of marks more or less on a central line. The cat, as its wild cousins – the leopard and the tiger – do to this day, lived amongst the jungle and stalked its prey by stealth. Speed was not so much a consideration as quietness. It stalked carefully along, planting its hind feet in exactly the same spot where its fore feet had been, so that only the marks of the hind paws were left on the ground. This was important, because if the hind paw snapped a twig the noise might alarm its prey. As a stalker

it had trained itself to balance in all positions, so that its feet could be brought more under the body, and it could worm its way along through bushes and small openings. It needed its claws with which to tear up its prey, for the cat has no canine teeth like the dog, and so the claws were sheathed to keep them sharp.

So the dog leaves four marks showing claws, the cat leaves two marks showing no claws. There is one exception in the feline tribe in regard to claws, and that is the hunting leopard, or cheetah, of India. It has been trained to hunt by speed like a dog, and so has developed still more peculiar characteristics. I once read a letter in a newspaper which said that if a wild cat missed its stalk, it could run down a rabbit or a hare in one hundred and fifty yards. I am afraid I am rather sceptical of this information.

A fox leaves a pad-mark rather like that of a small dog, but there are several points of dissimilarity. The impression is narrower by comparison with its length; the hind pad is smaller compared with the size of the toes; while a careful examination of a clear print will show traces of hair between the toes, and the toes and the pad, leaving a furry margin as opposed to the more clear-cut impression of the dog's paw.

The fox's trail, or series of tracks, seems to be more akin to that of the cat than the dog. The dog splashes along, and seems to take special delight in putting its feet in muddy places, while the fox walks deliberately and avoids wet and dirty places. Usually, too, the fox registers its hind paw over the impression made by the fore paw, like the cat, and, naturally, avoids beaten tracks used by men.

There is one interesting point in connexion with the toe-walkers that might be mentioned, and that is that the back of the fore foot is concave and the back of the hind foot convex, just as the back of the palms of our hands is concave and the back of our heels is convex.

All the animals I have mentioned above are proportionate, although they fall into different classes on account of the formation of their feet.

The best way to distinguish between the various types of animals whose hind legs are longer than their fore legs is by the size of the actual track, and the distance between the successive marks. For instance, it might be easy to distinguish the track of a kangaroo from that of a hare, but not so easy to distinguish the track of a hare from that of a rabbit; although, if you have the tracks of a rabbit and hare side by side, there would not be much difficulty. Locality will aid to a certain extent in the latter problem, and locality should always be taken into account when you are trying to identify any particular track. In these leap-frog tracks, an important point to be certain of is the direction in which the animal is travelling. Some Scouts find it difficult to grasp that a four-footed animal's hind legs can come in front of the fore legs.

The third class of animals with short legs again show peculiar characteristics between the various types, although most of them are also sole-walkers. These characteristics depend more upon the length of the bound than upon the size of the individual marks made. Many will show the marks of the tail as a drag between the two parallel lines of track. The tail marks the otter when coupled with his size, and the fact that he walks a few steps occasionally. Rats seem to leave their trails behind more than mice do, but the different varieties of each leave a slightly different track. A water vole and a common brown rat may be difficult to distinguish from each other by the track they leave, but here again environment should be taken into account.

Among the corpulent class of animals, the badger will register the hind foot across the fore, as has been mentioned, the porcupine will also turn his fore toes in slightly, while the three long nails of the badger's fore will usually be more clearly marked than the four long nails of the porcupine. The beaver's toes are spread out, and webbed to a certain extent.

This chapter is very inadequate, and only gives a few generalizations, but it would take more space than can be afforded to enter into the details of the peculiarities of the track of each different type of animal. At the same time it would make the cost of this book prohibitive if pictures of a large number of animal tracks were given. A useful series of careful drawings of animal tracks will be found in J. S. R. Chard's *British Animal Tracks* (Pearson). It is of the first importance that, if Scouts are being taught to recognize the tracks of different types of animals from pictures or diagrams, at least one mark should be life-size. Otherwise it is not

possible for the Tenderfoot to distinguish between the track of the bear and the track of the porcupine! Track dies will be found useful because they give a life-sized representation of the single print, although, you will remember, they cannot give a lifelike representation of the trail the animal would leave, nor will you always see in actual practice the clear-cut impression that the die leaves.

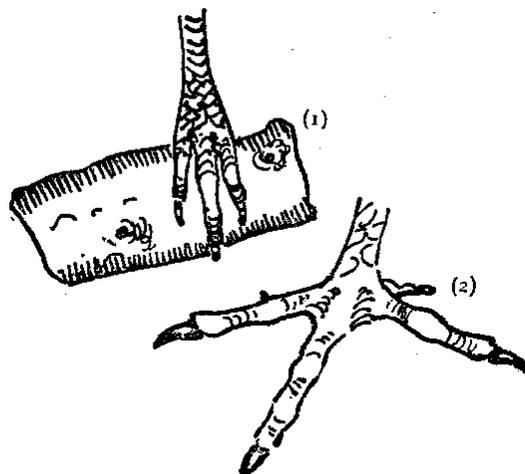
## CHAPTER XX

### BIRD TRACKS AND THE SNOW AS A TRACKING MEDIUM

IT is impossible to attempt in any way to classify the tracks of birds with the same completeness as those of animals, because the tracks of several birds are exactly like those of domestic fowls, and the tracks made by young birds of one kind are somewhat similar to the tracks made by old birds of another kind.

The locality where a given track is seen is the most important point to be considered. If tracks, similar to those of the common or garden hen, are found at a considerable distance from a farm, or any human habitation, it is usually safe to deduce that they were made by a wild bird.

The main differences that will be noticed are between the bird that perches in trees, the bird that walks on the ground, and the bird that lives on the water. The tree-percher – sparrow, chaffinch, thrush, etc. – generally hops along the ground with both feet together and in line with each other. The ground-walker – hen, pheasant, grouse, and so on—walks along somewhat like we do, first one foot and then another. The water-bird – duck, goose, swan – waddles along with its toes turned in.



Foot of (1) Pigeon. (2) Pheasant.

Amongst the tree-perchers it is possible to identify one kind of bird from another only by the size, and now and then by a tail-mark. As I have already indicated, however, size is apt to deceive, but at certain seasons of the year, when the young birds have grown up, there is a greater chance of making an accurate decision. For instance, the chaffinch leaves a small mark, with sometimes the flick of the tail showing on the ground; the sparrow's track shows larger marks; the thrush is again larger and the hops it makes are longer. The ground-walkers are mostly game birds, and it will be found that the toes of the game birds are set much wider apart than those of, say, rooks and blackbirds. The angle of the outside toes of game birds is set at, or greater than, a right angle, whereas the angle formed by the outside toes of other birds is less than a right angle. Again it will be noticed that the toes of the game birds are of even thickness almost to the tips, while the toes of others taper. Pheasants and partridges

especially have peculiarly smooth toes which leave a clean-cut impression, while such birds as pigeons have coarser scales which leave a far less cleanly-cut impression. The pheasant's track, however, is larger than that of the partridge, and its middle toe stands almost in a straight line with its tail. The cock pheasant trails his tail behind him. The snipe makes neat tracks which might be mistaken for the tracks of other birds, if it were not for the little round holes here and there, which show where it has probed for food. The woodcock's tracks are rather similar, but larger, and the beak marks are also found.

The tracks of water-birds are usually so much alike that again only the difference in size makes it possible to distinguish between the species. Their webbed feet clearly distinguish them from the ground-walkers and tree-perchers. If you notice that there are both ducks and geese in a pond, then you will be able to distinguish the tracks of the geese in the mud from those of the ducks. If you do not know that there are either ducks or geese near about, it is difficult for you to say which of the two, if either, made a particular track that you have come across.

Mention should also be made of the various Gulls and other sea-birds which will leave slightly different tracks on the sand, and of another division of water-birds into waders and non-waders. The feet of the waders may show slight webbing but more usually it will be found that the toes are long and stand well out from each other so as to give a greater surface on which the bird can walk in the mud.

The trained keeper in pursuit of game birds usually pays more attention to other signs than the tracks he may be able to see on the ground. Feathers will be found in places where birds have taken sand-baths, small paths leading here and there in the grass will show where birds have eaten. The place where a bird has been feeding, as well as the food itself, will give a clue to its identity.

Undoubtedly the snow is the most suitable medium for bird tracks. A party of us were out looking for tracks in the snow-covered fields one March morning, when we came upon the tracks of a pair of partridges. Evidently they had come down to a small depression in the ground in the hopes of getting a drink, a nearby pond was frozen over. But there was no water there, and they had obviously had a tiff, for the tracks separated from each other, growing wider apart. Then one, the hen bird, I think, said to herself, "Well, he is not such a bad fellow, even though he does make mistakes sometimes," and started to sidle in towards her mate. He wasn't having any just then, his pride had been hurt, and the other beat a hurried retreat to her own line. Shortly afterwards the tracks of the two grew closer together until they met. There was some billing and cooing, for the snow was much trampled and the marks of wings showed here and there, and then the pair flew off happily together, and their tracks were no more seen.

The snow not only shows the marks made by the feet of the birds but the marks of their wings and tail as well. For instance, when a magpie alights on snow it will leave a clear impression of its tail-feathers as well as of its outspread wing-feathers.

When the snow is on the ground we have one of the very finest opportunities for the practice of tracking. In the back-yards in town you will be able to see the tracks of birds, of dogs and cats, and possibly of other animals as well. In the country it is impossible to walk far without encountering numerous tracks of animals and birds. With a little practice, the Scout should be able to differentiate at once between the various tracks he comes across. Those who live in countries where the snow lies for some months should become very proficient in distinguishing one track from another; but I have noticed in the winter in Switzerland that the many interesting tracks, which made the more interesting my own poor essay to learn the art of Skiing, passed unnoticed by most people.

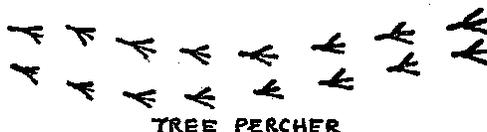
It is not so easy, however, to make as accurate observations in the snow as you might expect. The actual condition of the snow governs the track marks that are made in it to an appreciable degree. Whereas an animal will leave a normal, clear track in snow an inch or two deep, or in deeper snow which has a hard surface, in deep, soft snow the whole appearance of the track will alter. On hard snow a rabbit's track is easy to identify, but in soft snow it is very difficult

to reconcile the large track marks he makes with his normal size. Again, animals which do not leave a tail-mark on hard ground may leave a very distinct tail-mark in the snow.

The snow also offers very favourable opportunities for the recording of tracks by camera. A folding pocket camera will secure pictures of tracks which will be of interest for their own sake, and will also be of use for instructional purposes.

A distance of from three to five feet will give good photographs of average-size footprints, while a distance of ten or twelve feet will give a view of the trail. Naturally, if a reflex camera is used, it can be focused to a nicety. It is the shadow that affords most contrast in snow tracks, so that a sunny day will give the best result, especially at times when the sun is low.

But it is not necessary to wait for the snow to photograph tracks. Good pictures can be taken of tracks in mud or sand, especially the wet sand of the foreshore.



## CHAPTER XXI

### PLASTER CASTS

ONE disadvantage of the snow as a tracking medium's that it has not been found possible, as yet, to secure the cast of a track in it. This is where mud and sand have a distinct advantage.

A plaster cast gives a permanent record of any track that may have been seen. The making of plaster casts is part of the test for the new Tracking Badge for Scouts; and a collection of such casts forms an interesting exhibit in a Troop or Patrol Museum, as well as proving useful in actual tracking work, since casts can be utilized indoors to show actual reproductions of tracks in a box of sand.

Plaster of Paris is usually obtainable from any builder's yard. It costs only a few shillings a hundredweight, so that frequently a Scout can obtain a tin full of it for a copper or two, or less. The best plaster is that used by dentists – fine Italian plaster – but is not so easily obtainable. In any case care must be taken to see that the plaster is absolutely fresh, and that it is kept in an airtight tin, as exposure to the air will render it stale so that it does not set readily when mixed with water.

When a track has been found on the ground, carefully lift any loose material, straws, etc., that may be laying across it, but take great care not to mark the track itself in doing so.

If the track is shallow or on sloping ground, it will be necessary first of all to build a wall round the mark with twigs or mud, or even strips of cardboard, so as to keep the plaster on the track while it is in a liquid form.

In order to make the mixture, pour a quantity of water into a mug and sift the plaster into it, breaking up any lumps as much as possible. Stir all the time, and keep on adding plaster until the mixture is of the consistency of thick cream, and can just be poured out of the mug. The quantity of the mixture required will naturally vary with the size of the track, but it is better to make too much than too little. Tap the mug on the ground, or with a knife, so as to get rid of air bubbles,

and pour the mixture gently into the crevices of the track. Be sure that the cast is made thick by adding successive layers of the mixture, as otherwise it will break in transit.

If the mixture is too thin, the cast will take a long time to dry, and will often be friable and easily crumble and break when it does eventually dry. If the mixture is too thick, it may set before all the interstices of the track have been properly filled.

The time the cast takes to dry will vary greatly according to atmospheric conditions and the dampness, or otherwise, of the ground itself. A pinch of salt added to the mixture usually has the effect of making the cast dry quicker, and of rendering its composition stronger.

When the cast is nearly dry, scratch on the back of it the place, date, and your name, and, if you know it, the name of the animal responsible for the track. At the same time make a record in your note book of all details in connection with the track – type of ground, weather conditions, age of track, what made it, its age, sex, etc.

When the cast is quite dry, dig it up, and wash off all the mud and earth that may still adhere to it. If you cannot wait till it is absolutely dry, dig it up and let the surrounding earth or sand adhere to it. When you have reached home it can be hardened by baking it in a slow heat, after which the superfluous earth can be brushed away. Take care, however, not to apply too fierce a heat as the cast will be apt to crumble to pieces.

Be particularly careful to wash out the mixing mug at once, after the mixture has been poured out on to the track, as otherwise what is left of the mixture will naturally harden, rendering it difficult to get the mug clean again. If the mixture has hardened in the mug, the best way to remove it is to place the mug in boiling water, so that the water does not touch the plaster, when the mug may expand sufficiently to release the plaster in a lump.

Before the plaster cast is quite set, a loop of string or wire can be inserted into it at the back so that the cast can subsequently be hung up in the Troop room. Otherwise, if casts are to be kept in good condition for any length of time, they should be stored in a flat box such as a butterfly case.

A knowledge of how to make plaster casts is a very useful accomplishment, because all kinds of things can be cast, from model bridges to leaves. In the case of leaves an impression of the particular leaf is first taken in plasticine, or some similar composition, and a cast subsequently taken of this impression in the usual way as detailed above. A surrounding wall of some kind will of course be necessary, and this wall should be shaped symmetrically, so that the cast can be used as a decorative plaque on the wall. The leaf cast can be subsequently coloured with ordinary water paints.

The best plaster cast I have seen was one taken by some Australian Scouts. It shows the track of a wallaby; the marks of both the fore feet and hind feet are clearly seen, and also the mark of the tail behind the next step ahead. The cast measures a foot across, and came to Great Britain from Australia without damage.

It will be of interest, and of use, to give the Police method for taking a permanent cast of a footprint. It has the disadvantage that the mixture requires heating and takes more time to make, but it has the advantage of making the cast more permanent and less liable to fracture.

The instructions are as follows:

Heat two parts of resin to one of paraffin wax (candle grease) in a kettle or tin over a slow fire until melted. Stir well, taking care that there are no lumps of any kind left in the mixture. The composition is then ready for use and is poured into the track and lifted after it has hardened.

For an afternoon's inter-Patrol competition let each Patrol set out with a tin of plaster, mug, spoon, and bottle of water and return in a given time, with as many different casts as possible.

A very remarkable cast was found by a Birmingham Scouter in 1926. While playing tennis at a club his attention was drawn to what appeared to be a hand standing out of a stone built into a bank. A good look at the stone showed him the casts of two distinct feet standing out in relief, one foot having four toes and the other five. The stone measured fourteen inches by ten inches, and a photograph of it is reproduced. The Scouter was greatly interested, dug the stone out of the bank,

and instituted inquiries in connexion with it. By a process of reconstruction of events, as Huxley puts it, the following story was deduced from that small piece of stone:

Some fifteen or sixteen million years ago, when our climate was hot and damp and muggy, and when the large forests of palms and ferns that now form our coal deposits were still above ground, a large newt, which is now known by the pretty name of *Ichnuim Sphaerodactylum*, wandered round the edges of a muddy pond in the part of the country where Hampstead now is. He left the marks of his feet in the mud and passed on. But very shortly afterwards there was a dramatic climatic change in the world's history. The hot sun came out and dried the mud just after a shower of rain had pitted its surface. Great storms of desert sand came and covered up everything, and all vegetation, and most animal life, including our friend the *Ichnuim Sphaerodactylum*, died in the intense, blazing heat. During a further few millions of years the sand that had covered the tracks hardened into sandstone. Over thirty years ago, when quarrying stone for the bank of the tennis club, the very bottom layer of the sandstone was reached, and on this stone being turned up, on the underside of it were the complete casts in the sandstone of the tracks of the feet of the prehistoric newt – a reptile some five or six feet long!

Plaster casts are nothing new.



## CHAPTER XXII

### TRACKING RULES

TO become proficient in the science of Tracking it is necessary to bear in mind always a few fundamental points that will help us to follow the track as well as to make an exhaustive study of the form of each animal's foot, and of his actions under varying circumstances. When tracking an animal, therefore, not only should we be able to identify the animal from the marks he leaves, but we should be able to follow the track wherever it may lead.

The fundamental points that we have to bear in mind when we are out tracking may be summarized thus:

Look into the eye of the sun.

Sketch, and memorize, one single print.

Get a comprehensive view of the whole track.

Think with the mind of the hunted.

When a track is lost, mark the spot, and cast round in a wide circle.

Keep down wind of your quarry.

Take your landmarks when you start, and look back occasionally as you go along.

I will elaborate these points one by one.

The first point – *Look into the eye of the sun* – has a limited application only, and it would be a mistake to follow it too closely all the way. When studying a track, or a series of tracks, in order to identify the animal that made it, and to deduce all the other points that have already been mentioned from time to time, it is necessary to know how to set about studying. If the sun is shining, it will be found that it casts a shadow on the track, small or great according to the depth of the impressions. If you stand with your back to the sun, you will be handicapped in your scrutiny because the shadows will not show up. If, however, you face the sun, you will

see a mass of detail which would not be so obvious from any other angle. You follow this point then in order to be in a position to carry out the second point.

It should be obvious that you would not follow out this advice as you proceeded along the track, and endeavour to keep the track always between yourself and the sun. You have naturally to proceed in the direction that the track runs! I would not waste your time stressing this point, if it were not for the fact that I have known boys glibly repeat, "Look into the eye of the sun," and think that that applied to the way in which they were to walk!

Too much importance cannot be placed on the study of the track when first it has been noticed. It will well repay you to make a careful, patient and prolonged study of the first clear impression that you come across. If you can sketch it all, it is worth while to sketch that impression in your notebook, putting down measurements, length and breadth, and any particular peculiarities that you may notice. In any case you should try and keep the appearance of the impression in your memory.

You will remember how the *Khoji* was trained; the careful study of an impression was the first point that was rubbed into him. You will find several instances in *Scouting for Boys* of the ease with which a trained tracker can pick out the track of one particular animal from that of others, and that is what you may have to do at any moment on your track. Animals are not so considerate as to avoid any marks made by other animals, and frequently you will find that the track you are following crosses other tracks, or is crossed by them. You will then have to pick out the particular track you are following from the others, and, unless you have made a careful study of, and remember, the exact picture that one impression makes, it will be impossible for you to distinguish one track from another at all.

The third point – *Get a comprehensive view of the whole track* – is as important as the second, but for a different reason. It is obvious again that if you had to go along studying each mark that the animal had made on the ground, it would take you ages to progress any distance at all. Speed in tracking is of some importance, if you hope to come within close distance of the animal you are tracking, and so you want to get the pattern of the track into your mind's eye. By doing this you can follow your track quicker because a glance ahead will show you where your track goes. It is an interesting fact that usually it is more easy to see a trail, a series of tracks, by looking some distance ahead than by looking at it from more or less straight above. This is especially the case on hard ground, on grassy land, or when the dew is on the grass or road.

When I was not quite so "old and feeble" I used, as I have mentioned, to do a lot of paperchasing on horseback, and a very fine form of paperchasing it is too. I was not a particularly good rider; my horse was not a particularly speedy animal or fine jumper, but we worked together. In addition to that, both of us used to look well ahead. In fact as often as not my mount was the first to spot that the paper turned, and I could feel him gathering himself together to take the turn. He used to go along moving his head slightly from side to side. As a result, between the two of us, we used to hold our own fairly well against much better riders and against horses that were worth two or three times as much.

So much for following the track along, but now we come to a point when we are in doubt as to which way the track goes. The marks we have been following seem to peter out all at once without any warning, even although the character of the ground may not have changed. It almost seems as if our quarry had disappeared into thin air. First of all then we should try to follow the precept – *Think with the mind of the hunted*. It is exactly the same advice as was given when we were dealing with the Detective and Deduction. We want to try to look at the problem from our quarry's point of view, and to ask ourselves, "Now, if I was a donkey, say, and was being chased, where would I go when I reached this spot?" If it was a rabbit, he might dart into a nearby coppice. If it was a hare, he might go straight on. If it was a man, obviously he would try to get under cover. By following out this policy it is possible frequently to go straight in the direction that you consider the hunted animal would have gone, and to pick up his track again on some favourable ground. In Yarn 12 of *Scouting for Boys* you will find a very apt illustration of this point.

It is not only when you have run off the track that you should keep this point in mind, but all the time, because if you know the animal's habits, and ask yourself what it would be likely to do as you go along, you will know where to look for "sign" which, again, will help you to follow the track all the quicker.

If the track has been lost, and your essay to place yourself in the position of the animal has failed, then the next point comes into play – *Mark the spot and cast round in a wide circle*. If you begin to tramp round about indiscriminately you can give up the track at once, for ten to one you yourself, or your companions, will obliterate any "sign" that there may be about. Place a hat or staff, or some other prominent object, on the spot where you first realized that you had run off the track. If there are a number of Scouts with you, it is not a bad plan to place a *reliable* Scout there, as then you can go farther afield and keep in touch with the spot by word of mouth. At any rate, when the spot has been marked, go right out to a flank, 10, 20, 50, 100 paces – it all depends on the type of country you are moving through and the animal you are tracking – and then start to walk round the circumference of a circle of which the marked spot is the centre.

Move ahead first of all, but do not stop until you have completed the circle – unless you have found the track – for your quarry may have doubled back on its tracks. If there are two of you, each can move out to a different flank, and each make a circle. If there are more than two, let the others halt and stay where they are without moving. If you are unsuccessful with your first cast round, don't give up; move farther out and try again. You will remember the story of the Australian tracker, Tiger, and how he cast round the fencer's camp in order to find the tracks of the runaway again. The camel story in Yarn 12 of *Scouting for Boys*, which I have already quoted, is another excellent illustration of this particular point.

It is not necessary for me now to elaborate the point – *Keep down wind of your quarry* – for it has already been discussed in the chapter on Stalking – Points to Observe. But it is a question where you bring this point into play. Just as a track does not always lead into the eye of the sun, so it does not always go up wind. You may have to track down wind in order to follow your quarry, but, if the "sign" tells you that the animal is near at hand, you may have to leave the track altogether and cast round in the hope of getting down wind of the animal before you are noticed.

Then the last point – *Take your landmarks when you start, and look back occasionally as you go along* – is of extreme importance whenever you are out in the open, in strange country, or even, in country you know when it is getting dark or misty. The reason for the observance of this point is that you should be able to find your way back to your starting-point wherever your track may have led you. Even in this country it is possible to get lost – I remember when at school losing the whole of my XV for several hours during a training walk on the moors when the mist came down – and no Scout should set forth on an expedition unless he is quite certain of his bearings, and turns round every now and then to have a good look at the country he has passed through.

Frequently as we go along we see a tall tree in front of us, and say to ourselves, "Oh, we'll remember that tree when we are on the way back." Having passed the tree, we fail to turn round and have a look at it from the opposite direction. If we did, we might quite likely find that the tree did not stand out from the others at all. We may have been coming down a slope, or there may have been other fairly tall trees on the near side. Most of us have experienced the same sort of sensation when out hiking. On returning along the same road as we went out, suddenly an uneasy feeling has seized upon us that we have taken a wrong turning somewhere. We don't recognize the road, it looks entirely different; and then we turn round a corner and see an inn which we remember passing on the way out, and are reassured.

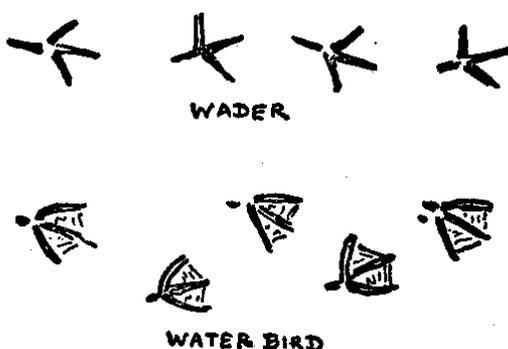
In that delightful book, *Jock of the Bushveld*, Sir Percy Fitzpatrick tells how he and Jock got lost at the end of an unsuccessful chase after a herd of koodoo:

"I had not once noticed our direction or looked at the sun, yet when it came to making for camp again the idea of losing the way never occurred to me. I had not the slightest doubt about

the way we had come, and it seemed the natural thing to go back the same way. . . . So off we started for camp and jogged along for a good time, perhaps half an hour. Then, little by little, I began to feel some uncertainty about the way, and to look about from side to side for reminders. . . . At the first puzzled stop I tried to recall some of the more noticeable things we had passed during the chase. There were two flat-topped mimosas, looking like great rustic tables on a lawn, and we had passed between them; there was a large ant-heap, with a twisty top like a crooked mud chimney, behind which the koodoo bull had calmly stood watching us approach; then a marula-tree with a fork like a giant catapult-stick; and so on with a score of other things, all coming readily to mind.

“That was what put me hopelessly wrong. I began to look for particular objects instead of taking one direction and keeping to it. Whenever a flat-topped thorn, a quaint ant-heap, a patch of tambookie grass, or a forked marula came in sight, I would turn off to see if they were the same we had passed on the way out. . . . When it comes to doing that sort of thing your judgment is gone and you have lost your head; and the worst of it is you do not know it, and would not believe it if anyone could tell you so. I did not know it; but it was nevertheless the fact.”

The two of them actually made two complete circles in opposite directions trying to find their way back, and then Fitzpatrick gave it up and decided to settle down for the night. When wood had been gathered, Jock scented something he knew, moved a few paces in a direction they had not been, and began to wag his tail gently from side to side. Fitzpatrick walked over to him, and looked over his head, and there, about three hundred yards off, were the oxen and the herd boy in his red coat.



## CHAPTER XXIII

### THE INFLUENCE OF GROUND, TIME, AND WEATHER

AT the risk of a certain amount of repetition, I feel I must reproduce a few suggestions which appear under the tracking test for the Seventh Degree of the Lone Scouts of America, who have now been amalgamated with the Boy Scouts of America. The Test was “Be able to identify the tracks of men, women and children, and of all the principal domestic animals, and be able to say upon your honour that you have successfully followed the trail of some dumb animal or human being for at least a mile without that one’s knowledge.”

The Degree book says first of all: “This Test is very important, and is really a trying out of your whole Scout training. To comply with it you must be able to observe keenly, compare one thing with another nicely, have a clear memory, and be able to reason how the sign came to be.

“This takes patience in getting all the sign possible, and imagination in supplying the things that do not happen to be there, and being able to see a possible vision of the happenings that made the sign.”

Just the same points, you will notice, as those upon which this book has been based.

The suggestions offered are these:

1. Look sharply and intently.
2. Look carefully and patiently.
3. Take into account possible age of tracks.
4. Take into account changing weather conditions.
5. Take into account nature of ground to retain tracks. .
6. Never give up, the trail is somewhere.
7. Take plenty of time to think.
8. Make everybody stop talking about other things.
9. Sit silently and deliberate about the chances.
10. Try to picture in your mind the party making the track.
11. Remember the possibility of a purposely misleading trail.
12. Accustom yourself to the observation of the ways of going of people and animals even when you are not tracking, such as the gait of people, and horses, dogs, cats, chickens, birds, etc., and of vehicles, observing the trail made. In this way only will you be able to know sign when you need to.

That makes a fairly complete lot of suggestions. So far we have dealt, directly or indirectly, with all of them except the possible age of tracks, changing weather conditions, and the nature of ground.

So much depends upon the state of the ground and weather that it is very difficult to recognize the track that is being followed under all circumstances. Its appearance on hard ground, and on soft soil, will be entirely different, and yet it is the same track. Possibly the best way to meet this difficulty, and to teach yourself how to recognize a track under varying conditions and on different kinds of soil is to keep on imagining what sort of tracks would be left, by a man or an animal, on the ground you are actually walking over at the time. By that I do not mean that there need necessarily be a track there at all; it is your imagination you want to bring into play.

On rocky ground, where there is no dust, you will have to look for small stones, or bits of twig, that have become displaced, when it is possible the spots from which they have been moved will show up. There may be a scratch here and there, or a small piece of rock chipped off, or (remember Tiger!) the rocks may themselves afford easy and obvious stepping places. If the rocks have lichen on them, some of it may be rubbed off or marked, or grasses and weeds growing in crevices may have been disturbed or bruised.

On hard ground, of a stony nature, tracks are practically invisible except at a distance. Sometimes, luckily, a small stone or two may have been displaced. The soil from which a stone has been displaced may look slightly lighter or darker than the surrounding ground. If the ground is very dry, usually there will be a faintly lighter shade; and if the ground is at all damp, a darker patch will show. Similarly the stone itself may have the side which lay on the ground exposed, and that side will show darker or lighter, as the case may be. Again the pressure of the foot upon the ground may make the spot show up slightly darker, or possibly lighter in some soils.

Soft, deep dry sand or dust does not give a clear impression, for the sand or dust falls in round the track and makes it blurred and difficult to read with any accuracy.

Soft and damp sand, or other soil, will leave a very clear-cut impression which will be easy to distinguish and follow, and will remain apparently fresh for a considerable length of time, if neither the sun nor the wind is very strong. If the soil is at all sticky, like clay, the impressions left on it will be all the more clear and lasting.

Although it is difficult to obtain any clear impression on grass, yet a trail through grass will show up very clearly. The bruised and trampled-down grass can be seen some distance ahead, and it is quite easy to decide in what direction the track leads. If on looking at a field you see a track through it that looks lighter than the surrounding grass, then you can be certain that whatever has made the track has been going away from you. If the track, on the other hand, appears darker than

the surrounding grass, then you know that whatever has made the track has been coming towards the place where you are standing. This is because when grass, or undergrowth, or even bushes, are bent down at an angle the light is reflected back from their surface. You will notice the same alternate strips of light and dark when the lawn has been rolled alternately in different directions.

A tramp visited a Scout camp very early one morning and departed with a number of garments, some food, and various other odds and ends. When the camp was roused the loss was discovered. It was noticed that a track leading away from camp showed up in the grass. This was followed for some distance, and the stolen goods were found hidden in a thick clump of grass in the middle of a field. The tramp evidently thought that they would be safe there until he could remove them after dark the next night. Whether he was watching the trackers all the time or not is not known, but evidently he thought that it was no safe place for him, and he was not heard of again!

It is still easier to trace a track through grass that is wet with dew or light rain, or which is frosted. Frequently, too, places will be found where the grass has been nibbled, or where a crack in a man's boot has torn off a blade or two, a little point this which may enable you to identify the actual wearer of the boot.

Snow as a tracking medium has already been dealt with at some length.

But whatever the nature of the ground may be, it is always wise to look up off the ground for "sign" from time to time. Where there are bushes, bits of hair or fur, or a shred of clothing, may often be seen, which will give a clue to the track, to whatever made the track, and to its height or bulk.

You may come across a broken twig, the clean ends of the break showing that it has been recently done. There may be other signs, such as the droppings of animals, which give clear indications as to the maker of the track, the way it has gone, and the length of time that has elapsed since it passed.

The age of tracks is "a most important point, and requires a very great amount of practice and experience before you can judge it really well."

In this respect a very great deal depends on the type of ground and on weather conditions. As I have already indicated, the sun and wind have a great effect on the appearance of a track. If any damp earth, or sand, has been kicked up from under the surface soil, a hot sun or a strong wind will soon dry it off to the same colour as the surrounding soil, and a strong wind will round off the sharp edges of the impression by blowing the surrounding dust over them. But the same track made in the same ground might look fresh for a considerable length of time, if it was a still, cloudy day. You will have to think out the problem for yourself before you can come to any decision with regard to the age of the track.

Spots of rain may have pitted the track, as in the case of our friend, the Ichnium Sphaerodactylum, and if you know when it rained you will have an additional clue as to time. A strong wind may have blown dust or grass or straws or leaves over the marks which will again give you a clue, if you have any idea as to when the wind got up or died away again. It is always important, when in the open, to keep an eye on the weather, wind, etc., and to remember what it has been recently.

The track you are following may cross other tracks, or be crossed by them, which will serve again as some indication. The marks may cover a track you know was made the night before, or the track of another animal whose habits you know to be nocturnal. On the other hand you may find the traces of insects and worms that have worked across the marks, showing that the track was made before they commenced their night wanderings.

If you are following a man, or men, the ashes of fires, spent matches, cigarette ends, scraps of food, etc., may tell you a lot.

Grass that has been bent will spring into its normal place again in a few hours, but if it has been broken it will wither. The owner of a station in Australia was riding with a bushman after a particular lot of sheep. He saw a lot of tracks, and suggested they should follow them. "Oh no,"

said the man, "these were only made two days ago, and the sheep we want must have passed this way a week ago."

So this whole question of ground, time, and weather seems to be somewhat inextricably mixed up, but if you set your mind to it, and analyse the different causes that are influencing the appearance of the marks you see, you will, with practice, be able to come to a fairly accurate solution as to time.

Your knowledge of the weather will also enable you to account for some of the peculiarities which the marks appear to show. Just as in deep snow, prints are apt to appear extraordinarily large, so, after rain on slippery ground, are the prints of animals likely to spread and take on a deceptive appearance. You must study the habits of the animal world in both wet and fine weather, for in the former the game usually lies closer.

Again and again we find that, from whatever angle we regard it, tracking calls for the most close and careful observation as well as constant practice!

## CHAPTER XXIV

### TRAINING IN TRACKING FOR SCOUTS AND CUBS

IN tracking, as in most other things, only practice makes perfect, and those who desire to know anything about it must practise the art as well as read up the theory of it. They must be prepared to go through a lot of hard slogging work, as the Khoji was, and to educate themselves by acquiring habits of observation and concentration, and by thinking instead of jumping to conclusions. Careful thought is required all the time.

If a Scout has to do his tracking alone – that is, to follow a track alone – he should move carefully along, placing his feet just behind each impression and taking great care not to obliterate them. When he is at fault he will know within a very short radius where to look for further indications. When the track disappears on hard ground, he should mark the spot where the last impression was seen and cast ahead, keeping to the same pace, and look at the more favourable ground for further "sign."

All this time he should be placing himself in the position of the man or animal he is following, so that his direction may change to where the latter would naturally have gone. If the track enters water he should not jump to the conclusion that his quarry has crossed at that spot. He may have taken to water to cover his tracks, and he may have emerged again on the same side, or at some point on the other bank not directly opposite the point where he first took to water. Remember Tiger's track again!

This method of getting to work on a difficult track is important, and so I will quote the illustration given in *Scouting for Boys*:

"I have watched a tracker in the Sudan following tracks where for a time they were quite invisible to the ordinary eye in this way. While the track was clear he made his own stride exactly to fit that of the track, so that he walked step for step with it, and he tapped the ground with his staff as he walked along – ticking off each footprint as it were. When the footprints disappeared on hard ground, or had been buried by drifting sand, he still walked on at the same pace, tap-tapping the ground with his staff at the spot where there ought to have been a footprint. Occasionally he saw a slight depression or mark, which showed that there had been a footprint there, and thus he knew he was still on the right line."

In tracking, as in everything to do with Scouting, it is better to work in couples, if possible. Each Scout should then take one flank of the track. If, for instance, the track is along a road, or well-beaten path, which renders it almost impossible to distinguish any track at all, it is best for

each to take one side of the road and walk along the very edge. Then if the track moves to one side, or leaves the road, it will be possible for one or other of the trackers to spot the traces of it.

If a Patrol is out on a tracking expedition, it is usually best for the Patrol-leader and one other Scout, the Second or another specially selected for his keen observation, to take the lead, and to let the others follow at a reasonable distance behind, with strict instructions that they are to keep quiet, and to keep their eyes open, and not depend upon the two in front.

If more than a Patrol is out on the job, and following the same track, there will not be much hope of doing any very successful tracking. A crowd is far more of a hindrance than a help.

And so, as usual, for actual practice in the art it is best for the Scoutmaster to get about with his Patrol-leaders only, and set them the task of getting their Patrols interested and on to the game.

Two simple means of giving practice and stimulating interest might be suggested.

First, in town or country a small tracking ground out-of-doors could be carefully smoothed and pieces of food of different natures exposed on it overnight. The next day the tracks that are almost certain to appear on the ground may be carefully examined. The food selected should be such as to tempt the birds and animals that are likely to frequent the locality.

Second, in the country in the winter there are many fields which are marked by the tracks of the stock in them. Each Scout in the Patrol can be given a different cow or sheep, say, and told off to trace, as far as he can, the actions of the cow or sheep up to the time he came into the field, and as far back as possible. This game could only be played provided the boys do not disturb the stock itself in any way.

Speaking generally, the Scoutmaster should try to aim at giving training in tracking more or less in the way, and in the order, in which the various aspects of the subject have been treated in this book. It may be necessary, as I have said, in order to get the boys interested, to start somewhere in the middle by studying, and trying to follow the tracks of something which lives; but even then the preliminary stages of mental training, the training of the senses, stalking, and so on should be taken up as soon as possible. If habits of observation are not formed, the boys' keenness on tracking will soon fizzle out, for they will not be able to make much of a success of it.

There is more behind the subject than meets the eye. In suggesting a Badge for Tracking – the particulars of which will be found in an appendix – B.P. wrote:

“I want to encourage this branch of our work on to a better, and more general, footing. It is really one of the most valuable activities we have for developing elements of character. But it is too little used by Scouters and Scouts.

“Its object of course is to develop –

“(a) Observation: i.e. ‘Sharp eyes,’ the habit of noticing the smallest details, both near and distant, through using the eyes, ears, nose, etc.

“(b) Deduction: reading the meaning of details when noticed, which involves the exercise of patient research, reasoning, imagination, common sense, etc.”

It is as well that the Scouter should bear these points in mind when he is thinking out activities in which his Troop might indulge, or when his Patrol-leaders have broached the study of Tracking to him.

In regard to the training of Wolf Cubs, however, a somewhat different line should be adopted. With boys of Cub age the most important point is to get habits that will be useful to them in after life well-founded. Hence it is the observation side of Tracking that should be emphasized in particular. As yet their brains are not developed sufficiently to benefit by the deduction side. Although Cubs will have the requisite imagination – too much of it in all probability – they will not have as yet acquired the patience, powers of reasoning, and common sense that are so necessary in elucidating a problem.

So with Cubs, as usual, it is best to start with quite small things, but to have these small things well done, and to leave the bigger things until they “go up” to be Scouts. In the Eighth Bite of *The*

*Wolf Cub's Handbook*, Observation, Man Tracking, Stalking, and Observation Tramps are dealt with.

There is a little about the newspaper made of the snow, track reading, and man tracking; but what is really more important is the part that deals with observation, and the training of the senses.

In regard to the material contained in this book, it is possible to give Cubs training in the simpler of the mental tests, and in a number of the games and competitions suggested for the development of the powers of sight, smell, hearing, taste, and touch. Beyond that one has to be very careful lest one forces the pace too hard, or indulges in activities which should be reserved for Scouts.

Cubs can follow a short trail, but it should be of the simplest kind, not necessarily made with Scout signs – better not (that is my personal opinion, mark you!) – but with pieces of card – a quarter of an ordinary playing card makes a goad trail, the pieces are distinctive, and so can be collected on the way. The study of man tracks should be just the bare beginnings, man, woman, or child, walking or running, not much more. Animal tracks can be found in the country, and imaginations set going as to what made them, but it will be too much to expect of Cubs that they follow whatever track has been found.

As the Cubs progress, simple sand stories can be brought into the training, but again the procedure should vary to this extent. It is best for Akela to tell a story to the Cubs first of all, bringing in a few simple facts about tracks, and a few simple points which they can remember. After the story has been told, the Cubs can gather round the sand track, on which the simple yarn has been previously acted, and trace the story they have just heard from the marks on the track. As you will have realized, this is reversing the process advised for Scouts. The Scout first sees what has been enacted on the sand track, and from it deduces the story for himself. The Cub is told the story first of all, and then traces it bit by bit from what he sees on the ground.

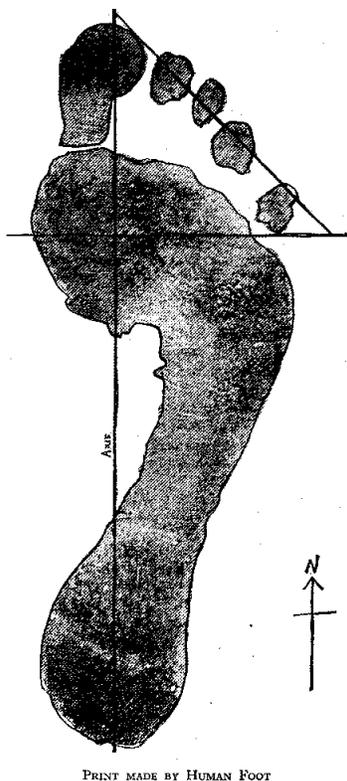
But in their training, such intimate Cub-like activities as Dressing-up and Acting will obviously be of great importance.

In fact, the part that Akela should take in training the Pack in Tracking is to allow them to nibble round the subject in various directions so that their appetites may be whetted to make a good meal of it when they are old enough to be able to digest it.

Just one word more! Again let me emphasize that the reading of this book will not make anyone a tracker. In itself the book has no pretensions to be a handbook on tracking, it merely attempts to deal, at times very vaguely, with certain aspects of the subject which appeal to the Scout. It is suggestive in its outline of the way in which the subject should be attacked.

I am alive to the danger of accepting literature as a good substitute for actual practice, and from time to time I have tried to suggest exercises which may be helpful in developing observation and in stimulating deduction. Both these powers must be trained by the actual doing of things, and not by hearing about them.

A thorough study of this book will NOT enable the reader to become as well versed in tracking lore as he could by years of actual experience in the woods. If anyone who picks it up fondly imagines so, then I sincerely hope that he will burn the thing before he has read a word of it. Perhaps I should have said this at the beginning, just as I might perhaps repeat at the end a great deal of what is contained in the first chapter. However, if you are not too bored, just turn back to the first chapter and read it again – you probably skipped it before – and you may be able to grasp the idea that I had lying at the back of my mind when I wrote it!



## APPENDIX

### TRACKER BADGE

#### *Tracker Badge.*

- 1) In Kim's game remember 25 out of 30 well-assorted articles after one minute's observation three times running; each article must be correctly described.
- 2) By *smell* alone recognize 8 out of 10 assorted liquids or solids – in common use.
- 3) By *hearing* alone recognize 8 out of 10 different sounds.
- 4) By *touch* alone recognize 12 out of 15 assorted articles (including such things as dry tea leaves, flour, sugar, etc.).
- 5) Recognize and explain 2 different characteristics in each of 5 different types of simple human tracks.
- 6) Solve, within 25 per cent error, 3 simple Tracking stories set in sand, snow, or other suitable natural media.
- 7) Produce 6 casts of animal or bird tracks, all casts being taken, unaided, by himself, 2 at least of the casts to be those of wild animals.
- 8) Follow a simple nature trail of at least 1 mile in length, containing at least 40 signs, of which at least 35 must be noted and described, verbally or in writing, when the trail is completed.