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GAME-PRESERVING

BY

CARNEGIE



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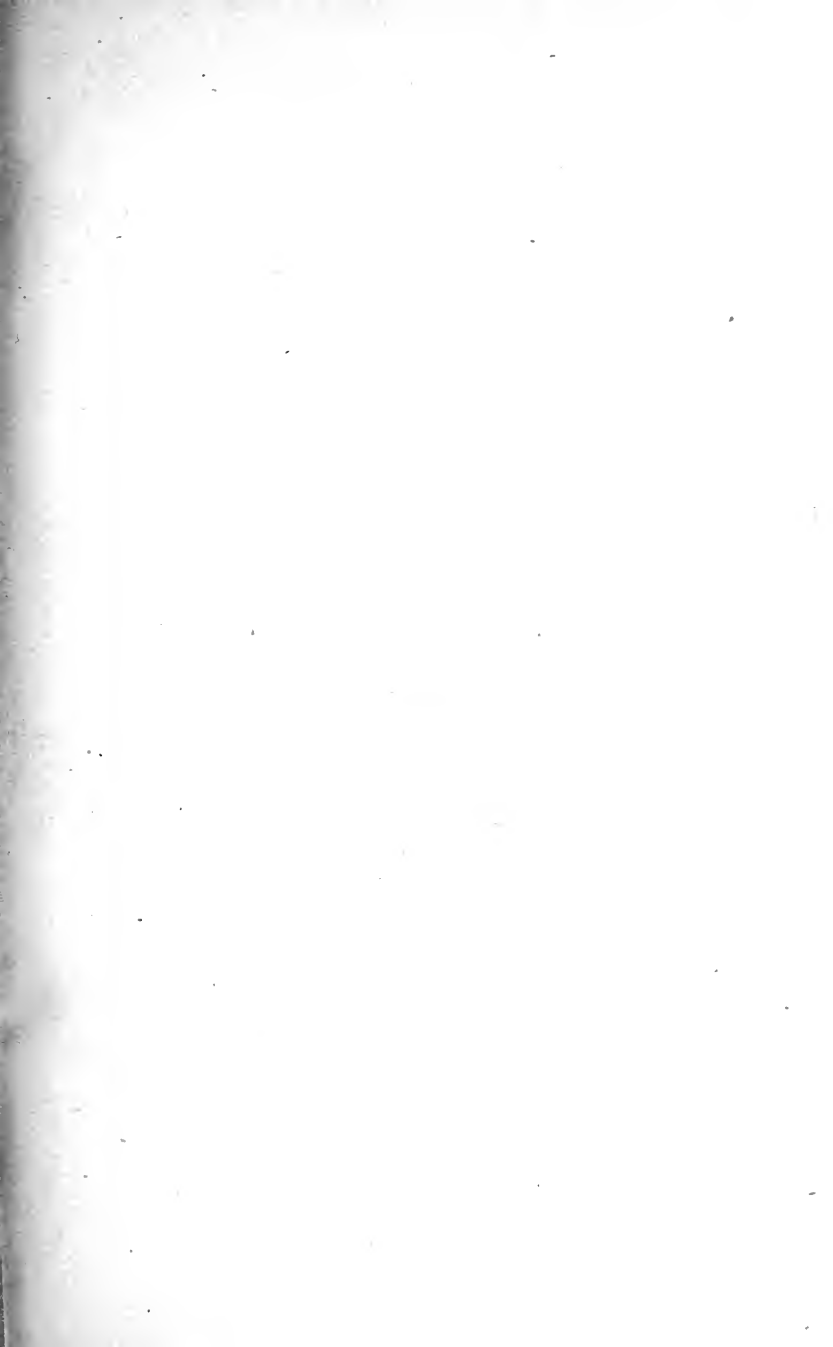
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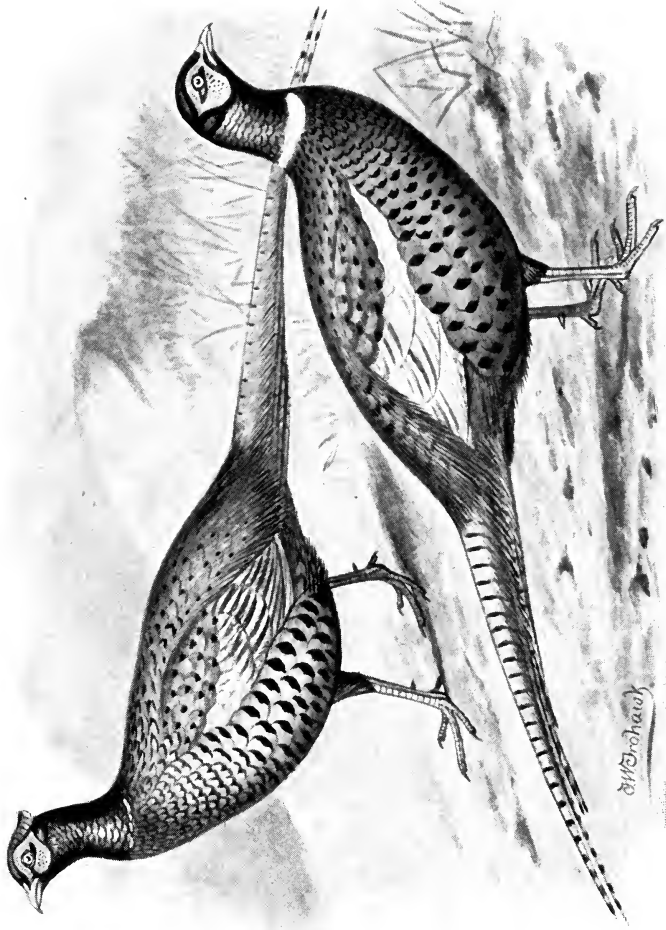
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Game, and the Destruction of Vermin.

WITH OTHER INFORMATION OF VALUE TO THE
GAME-PRESERVER.

By **WILLIAM CARNEGIE**
("Moorman")

THIRD EDITION

(Revised throughout and considerably enlarged.)

With 13 Plates from drawings by F. W. Frohawk and
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PREFACE.

THE present work, although nominally a second edition of the author's "Practical Game Preserving," is practically a new production. The length of time which has elapsed since the first edition appeared has witnessed such great changes in our system of preservation, there has been such an increased amount of knowledge gained, and old methods have had to give place so largely to new ones, that an entire revision had become necessary.

The aim has been to provide the game-preserved, as well as the gamekeeper, with a thoroughly trustworthy handbook, in which everything is set out clearly and precisely, and without confusing the issue by reference to alternative modes of working.

It has also been deemed advisable to exclude some matters of a comparatively unimportant nature, such as the trapping and snaring of rabbits, the management of ferrets, &c., which found a place in the previous edition. These have been dealt with fully in my small manuals upon the respective subjects.

Reference to the badger, the marten, and the otter as vermin is also omitted, as for the most part these creatures no longer occupy such position.

Everything appearing in the manual is the outcome of proved practical and personal experience.

W. C.

June, 1906.

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PRACTICAL

GAME-PRESERVING.

INTRODUCTORY.

GAME-PRESERVING as we know it to-day has almost attained to the dignity of a science. The haphazard methods surrounded by a fictitious mystery which prevailed to within half a century ago have given place to carefully organised system, in which every detail is thought out, every eventuality provided for, so that the semi-artificial state which is set up may be productive and permanent. Wherever what we know as the balance of Nature is interfered with, influences will be produced or magnified which must be combated or controlled. The fact that close preservation of game does upset this balance must be clear to everyone. It consequently follows that to ensure success in operations of this kind nothing must be left to chance: every development involving an increased supply of game must be considered from all points of view. Thus it arises that not only must the modern gamekeeper be fully competent in every branch of his work, but that the preserver who is his master must also possess complete knowledge of the general conditions which govern it.

Without going very far back, it may be safely averred that the great sportsmen of two generations ago could, for the most part, have possessed very little idea of the limits to which game-preservation would reach in the present day. Originally, game-preserving meant merely the reserving of the game on an estate to the owner or tenant of that estate. It was restricted to protecting the game from poaching and the attacks of predatory beasts and birds. A certain limited knowledge was possessed by gamekeepers as to the control of the game, the assistance to be extended to the birds and animals in their breeding operations, the regulation of the respective quantities of the different sexes, and the best means of bringing them within reach of the gun. To-day everything is changed. What may be described as the experimental period has been passed, and from a vast quantity of knowledge gained, a system or, rather a series of systems has been evolved which, if it does not reach perfection, goes very near to its attainment.

Modern game-preserving may be defined as the production, maintenance, and delivery before the gun of the largest head of furred and feathered quarry which a preserve is capable of producing. To achieve this end the modern gamekeeper must of necessity be a man of many parts, and the preserver of many resources. In the old days the owner of the manor left everything to his keeper, merely asking that a certain quantity of game should be provided, and being satisfied if it were forthcoming, taking no stock of the methods employed. To put it mildly, the requisitions were upon a moderate scale. Nowadays, the maximum of possibilities is demanded, and the gamekeeper must possess the ability to provide it. If he do not, the preserver is sufficiently master of the situation to be cognisant of the reason. Thus it comes about that, where in the past the gamekeeper was able to maintain a sort of

mystery as surrounding his calling, in the present day nothing but sheer efficiency in every detail and branch of his business commands patronage. Without this he cannot prove successful. In the same way, unless the preserver be intimately acquainted with every point which leads to success, he cannot expect to be properly served. It is, however, abundantly true that to the latter-day preserver there is very little unknown in connection with the details of the work, and he is able to exercise a salutary supervision over his servant and his servant's doings. Thus it is that in modern game-preserving the owner of the estate and his keeper are inseparably interested.

Obviously, no particular and precise system is applicable to every estate. It is in the application of general principles to peculiar circumstances that successful results can accrue. They require modification here, amplification there; but in any case they require working out from start to finish with a full knowledge of each individual requirement. To be able to accomplish this successfully, the game-preserver, whether in himself or his keeper, must be thoroughly intimate with the life-history, the necessities of food, protection, and shelter, of each and all of the birds and animals that come under his charge. He must know how to foster them, guard them against natural enemies, against disease, and inclemencies of weather. Not only must he know what to do, but when to do it, and be able to employ an intelligent anticipation of coming events in the application of the very numerous resources which are nowadays at his command. Partial knowledge, the inability to link cause with effect, and the lack of means or power to remedy or to prevent evil when it threatens, are bound to lead to failure, and failure in one direction begets it in others, and, with that, great and increasing expense.

It is impossible to embark in the preservation of game without spending money. It is an expensive undertaking and one necessitating the outlay of capital even in the most modest circumstances. It is, however, possible to avoid excessive expenditure, and by judicious economy and the husbanding of resources to reduce the cost of the game reared to a reasonable price per head. This fact will always be borne in mind in the following pages, which, being intended as well for the novice as for those with some knowledge of the subject, are based upon the assumption of not unlimited means. It must always be borne in mind that directly the limit of a legitimate amount of game is passed expenses increase at a rapid ratio. Provision is therefore not made for extraordinary requirements.

Throughout the following pages there will be described a clear, practical system of dealing with each item in turn, which, from experience, has proved successful and satisfactory. Alternative plans and suggestions will be avoided as tending to confuse, but the intelligent preserver, acting under the individual conditions which attach to every estate, will be able so to modify the instructions given as to fit them to his particular requirements. There is nowadays no mystery attaching to the preservation of game. It has become a hard, matter-of-fact business, and as such must be dealt with in purely practical manner.



CHAPTER I.

PHEASANTS: Their Natural History.—Varieties.—Crosses.

THE pheasants which exist in the woods and coverts of the British Isles for the most part consist of true or cross-bred stock of two very similar but distinct species. These are known generally as the Old English or Dark-necked Pheasant (*Phasianus colchicus*) and the Ring-necked Pheasant (*P. torquatus*). Although coming from widely-distant lands originally, they possess, under the influence of acclimatisation, almost identical characteristics of haunt and habit, differ but slightly in bodily structure, and beyond the divergences of plumage indicated by their names resemble one another in general colouring. These two species of pheasant represent the main stock of British preserves, and in the meantime will serve as the basis of what information is necessary as to the natural history of this game-bird. Other species of pheasants will be dealt with subsequently.

The pheasant of the preserves of the British Isles is mainly a denizen of the woods, but is not notable for sharing all the characteristics of the winged species, for, in addition to finding the major portion of its food upon the ground, it builds its nest, save under very exceptional circumstances, always on the earth, while it adopts as occasion arises either the boughs of trees or the ground as a roosting-place. In its natural state, that

is, in as far as the pheasant has such in these islands, its haunts are always chosen in or in proximity to woods or plantations, the most favoured being those where thick undergrowth of small bushes, shrubs, bracken, and bramble abound, as it usually does in the woods and plantations of this country, where the underwood, such a noteworthy feature of the landscape, is most conducive to its welfare and contentment.

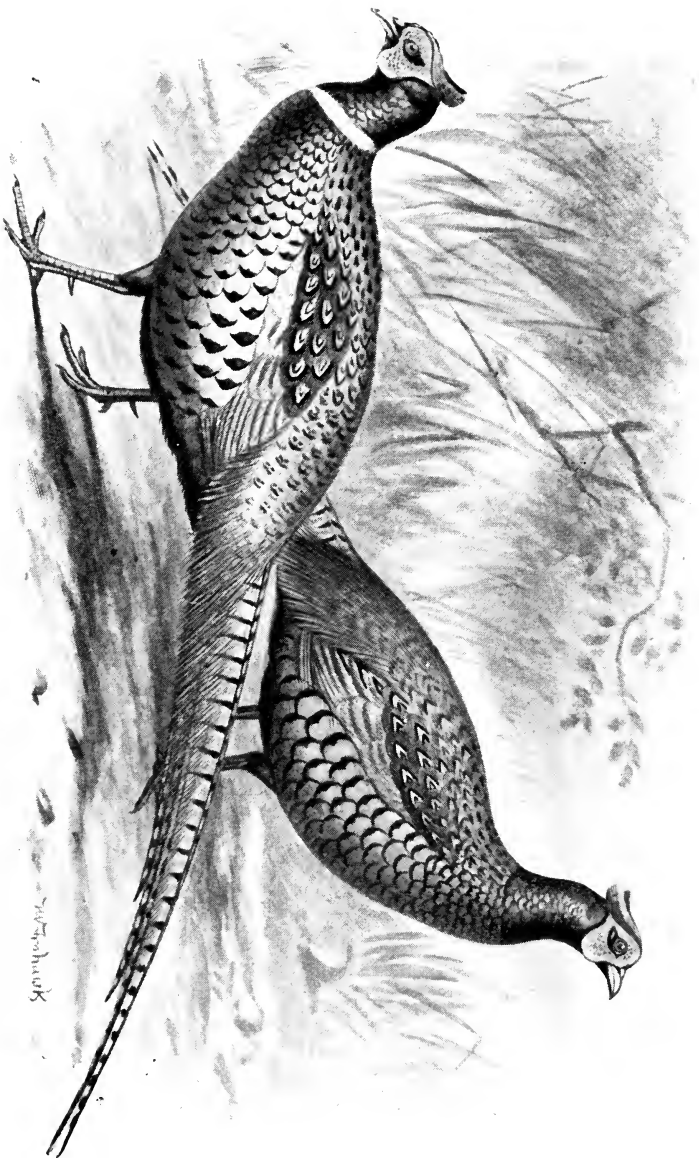
This game-bird is, on the whole, of a retiring disposition, and, during the daytime, remains concealed, as a rule, somewhere amongst the covert it enjoys. Although individual birds are often seen, the number is small in comparison to those which do not show themselves. The pheasant generally chooses for its feeding-times the periods about sunrise and before sunset, at which hours the obtaining of food becomes a necessary occupation, while during the remainder of the day it may, like other birds, pick up any morsel of provender which may take its fancy. It has, also, certain defined feeding-grounds to which it runs. Sometimes they are near to, occasionally distant from, its haunts; but in any case it usually adopts a terrestrial, in place of an aerial path, making good use of its legs in preference to flying. In the intervals of feeding the pheasant lies pretty close in the covert, spinney, or hedgerow, and although it may wander about somewhat, its daily existence is invariably within certain bounds, which are only transgressed under exceptional circumstances. At night, the pheasant—except during a portion of the nesting and brooding season—goes to roost on some neighbouring tree which offers a horizontal branch to perch upon, but its preference for the larch or the oak is very marked, and it is noteworthy that pheasants at roost on the former tree are very visible from beneath to any would-be poacher by reason of the scantiness of its

foliage. The pheasant's next favourite roosting resort is the Silver Spruce, and to this belongs every desirable quality for the purpose, and were this species universally adopted for pheasant-preserves, a great blow would be struck at night-poaching. Ash, holly, and other trees are also freely resorted to. Pheasants do not roost exactly in company, side by side, yet not often widely apart, and where one bird finds a suitable night's quarters, others are not far distant from the spot.

Just before the female pheasant commences the preliminaries of her peculiar duties, she frequently leaves the boughs at night and finds a roost on the ground, generally ensconcing herself amongst some long grass at the foot of a tree or beneath a shrub. About the same time, or perhaps a little before, the male may also adjourn to *terra firma* for his night's lodging. The pheasant is, it is almost unnecessary to say, polygamous, each cock-bird taking, when in an uninfluenced state, from three to five hens under his care; but this of course regulates itself a good deal according to the relative numerical superiority of the hens. About the first or second week in March the cock begins his search for mates, heralding the same by a considerable amount of crowing, and showing increased brilliancy of plumage and stateliness of mien, which naturally excites the ire of other would-be cavaliers, the result being a considerable number of battles royal for the possession of the hens. The whole of the pheasant's breeding operations take place on the ground, the nest being a very simple arrangement, consisting of any suitable circular depression, either in the ground proper, beneath a bush or such similar hindrance to discovery; or it may be in long clover or grass, or in a clump of sedge or other coarse herbage. Unfortunately, pheasants have a too frequent fancy for nesting in long meadow-grass or clover;

consequently, in these days of mowing-machines, the number of nests and broods destroyed is far larger than in the time of the scythe. However, a careful, considerate preserver is aware of this habit, and can take the necessary steps to ensure safety for his nests, guarding them against both the human and mechanical mower, or removing the eggs or chicks to be hatched out and reared by hand.

The nest itself consists of at most but a few leaves or dry wisps of grass, which go to form the only lining upon which the eggs, eight to fifteen, are consecutively deposited. When disturbed, the hen pheasant leaves her nest reluctantly, and is only "pushed up" when concealment or safety is no longer possible; otherwise, when quitting the "nide" or "nid," as the nest is technically termed, she instinctively scratches a covering of leaves or grass over it, and will also employ various artifices in order to disguise its whereabouts from furred or feathered vermin, by running some distance to or from it, always approaching or leaving it in a different direction. The hatching-season extends from the end of April to the middle of July. As soon as the young are from twelve to twenty-four hours out of the shell the hen leads them forth, and the process of rearing—into close consideration of which there is no need to enter—is diligently carried on. If undisturbed, the hen pheasant adopts a particular spot in the neighbourhood of which the young are kept for some time, and as soon as strong enough they are introduced to the mysteries of the hedgerows, and, later on, to the corn, root, and pasture-fields. Should the brood suffer one or two successive disturbances, they are speedily led to the wood or covert, whence they issue only at feeding-time. By the middle of September the youngsters should be full grown, when, having moulted off their fledgeling garb, they don that of the adult bird. Of



RING-NECKED PHEASANT AND COMMON PHEASANT

(PHASIANUS TORQUATUS)

(PHASIANUS COLCHICUS)

Two species from widely different countries that are commonly found in our preserves.

course, in the case of later-hatched broods, the poults are correspondingly backward.

The natural food of the pheasant is of great variety, and consists during the spring-time of the year mainly of plants of a succulent nature, roots of various kinds, and numbers of insects of many sorts. During the summer months the cornfields provide a great deal of its sustenance. In autumn and winter it is, perforce, obliged to vary its diet with acorns, beech-mast, hazel-nuts, haws, the red fruits of the wild rose and of the hawthorn respectively, any description of corn obtainable, besides the seeds of a quantity of plants as varied as are the insects it consumes in spring, summer, and a portion of the autumn.

Any further insight into the natural history of the pheasant must be gained by actual observation. The short outline given of its daily and yearly existence should form a foundation whereon to build up a thorough knowledge of its habits.

There are associated with the Old English or Dark-necked and the Chinese or Ring-necked Pheasants in British coverts quite a number of other species, some of which have come into almost general adoption for purposes of crossing, or as additions to the ordinary breeds. Of these the Japanese Pheasant (*Phasianus versicolor*) has already made its mark in our preserves, and may be referred to in some detail here; but I shall devote further attention presently to the consideration of those new species most suitable for introduction in our coverts. Meantime, it will suffice to say of the Japanese Pheasant that it is extremely beautiful, hardy, and remarkably prolific, especially when crossed with the ordinary varieties. It is not necessary to differentiate largely between either of the commoner species and this one as regards their habits or their treatment, beyond the

fact that where it is proposed to introduce the Japanese upon a preserve, the pure-bred stock should be kept in pens for breeding purposes, the surplus birds being turned away. Once this has been done, they intermingle so freely with other breeds that it is unlikely that any further pure-bred birds will be produced, although of course it is not impossible. Their management in pens is practically the same as with the ordinary breeds.

Naturally, with such a variety of birds of very similar species coming into connection with one another in the woodlands and coverts, the value of each species as game-birds becomes a matter of some importance, as does also the question of crosses between the respective species. It is therefore necessary to devote some attention to these matters in order that the game-preserve may be able to arrive at a correct decision upon such matters should occasion arise.

In recent years the Ring-necked Pheasant received for some reason what must be described as an inordinate amount of favour. Subsequently, favour returned to the Dark-necked bird. Each possesses certain merits. The first-named is possibly more prolific, the latter is the larger and better bird. Indiscriminate crossing has been held to combine the qualities in which they respectively excel. The probability is, however, that the commingling of the breeds, without reference to pureness of stock, exerts a far from beneficial effect upon the resulting progeny, the birds deteriorating in form and stamina. As a matter of fact, there is very little to choose between the two, provided the strains in both cases are well maintained and subject to regular infusions of fresh true blood when occasion requires. It will be found, however, that each species in its turn thrives better in every respect in some districts than does the other; whilst, again, they will do equally

well alongside one another. It must be further noted that the tendency is, where the Dark-necked birds prove the more suitable, for the Ring-necked ones, when crossed with them, to lessen the general size of the birds. This is obviously an outcome to be avoided.

In connection with this matter it is well to remember that the Ring-necked bird is the stronger element in any cross, and that a few cock birds of this species will imprint their mark upon the whole stock of a preserve, not only in the first but in the second crosses. In the same way hens of this species will throw a preponderance of Ring-necked marked birds amongst their progeny. This inconsequential crossing of the two breeds is far from being beneficial to the general stock of pheasants, and it would be well if preservers would make a point of endeavouring to maintain a pure strain of one species or the other in their coverts.

The occurrence of white specimens is not infrequent amongst the ordinary pheasants; whilst pied birds are of still more frequent occurrence. The white birds are extremely pretty. As a rule, they are smaller and less strong than the others, whilst the eggs from them usually embrace a large percentage of unfertile ones. This colouring as well as that of the pied birds is mainly a sport, and pheasants of this kind cannot be relied upon to reproduce their peculiar plumage in their offspring, even when mated together.

Crosses between the Japanese and either of the common pheasants invariably largely reflect the former parentage. The male *P. versicolor* is extremely fertile, and will impregnate a far larger number of hens than any other pheasant hitherto tried in British coverts. There is no doubt that wherever the country suits it the Japanese Pheasant is a very valuable addition to our list of game-birds. It is hardy, vigorous, and when crossed with

P. torquatus or *P. colchicus* produces excellent shooting birds, larger in size as a rule than the ordinary ones. When hens of the former species are mated with the Japanese Pheasant the result is in every way satisfactory. The hens prove most prolific, and the resulting stock leaves nothing to be desired.

I would now direct attention to several species of pheasants which have already been introduced and may be introduced into British coverts with varying degrees of success and benefit. Some of them are mainly suitable for rearing in aviaries or pens and turning away, others will cross with the ordinary species, and most of them will interbreed with one another. It is, however, to be remarked that some discretion should be exercised by the ordinary preserver in connection with some of these species whose permanent influence upon birds in covert has not been wholly proved, for it may be that experiments with them conducted in connection with aviary birds may not produce such favourable results amongst the wild stock of the preserve. At the same time, there is no doubt that considerable room exists for improvement in much of our ordinary pheasant stock, and that it is greatly in the interest of the ordinary preserver to do what he can in this direction. Many of our leading owners of big preserves have devoted much pains and money both to improve their general stock and to add to the variety of the quarry provided for shooting, besides adorning their coverts with new and beautiful species. With the benefit of their experience as guide, the generality of preservers on a large and small scale should easily be able to follow so good an example.

Prominent amongst the pheasants which have been introduced into our coverts with a certain amount of success is Reeves' Pheasant (*P. reevesii*), but it is questionable

whether it is entirely suitable for turning away promiscuously. Although usually classed amongst the true pheasants, there is but little doubt that authority will sooner or later be found for excluding it from them. It is a beautiful bird of almost entirely pheasant-like appearance; the great length of tail, which sometimes extends to as much as 5ft., marks it as very conspicuous; whilst the body-colouring is distinctly ornate. The female is coloured in more sober fashion, and does not possess nearly the same length of tail. For the most part bred and reared in aviaries for subsequent turning out, it has, however, been established with a considerable amount of success upon some preserves, notably in the North and in Scotland. As a game-bird before the gun it has a good deal to recommend it, being a strong and fast flyer. It is also of hardy constitution.

One of the chief drawbacks attaching to these birds is that they are uncertain and very poor layers, and will suffer very little disturbance during nesting- and brooding-time. They will, however, cross readily with ordinary covert pheasants, the produce in the first instance usually showing marked evidence of the cross. Unfortunately, however, the produce cannot be relied upon, as eggs resulting from a first cross are mainly unfertile, and those from subsequent crosses almost entirely so. The chicks resulting from any fertile eggs, even in the first cross, are for the most part weakly, difficult to rear, and, of course, rarely reach maturity. Altogether, Reeves' Pheasant may be regarded as an entirely undesirable form of cross with the ordinary breeds, whilst upon the other hand its presence *per se* in coverts provides an exceptionally welcome addition to the ordinary stock. In view of the established fact that the cross is more or less sterile, whether upon the male or female side, as between Reeves'

Pheasant and any other species, it is obvious that where it is held desirable or opportune to introduce these birds into British coverts, they should be bred and reared in separate aviaries, and be either limited, as far as possible, to separate coverts or be killed down annually. Not only do they produce largely unfertile eggs with resulting sterile offspring, but they contaminate the hens of other breeds, and render them sterile.

It would appear, from the information offered, that Reeves' Pheasant is not a true pheasant; this is made fairly evident from the above facts. There is nothing of the kind forthcoming in regard to any other of the true pheasants of new species crossed with the old. The probability is that Reeves' Pheasant is more akin to the *Gallinaceæ* than to the *Phasianidæ*.

Inasmuch as I am mainly concerned in these pages in dealing with what is rather than what might be, I am compelled to leave to one side the consideration of the possibilities attaching to several species and pseudo-species of pheasants claimed to be suitable for introduction in British coverts. With many of these the fancier or naturalist preserver is more concerned than the game-preserver. Perhaps the best result will be achieved by eliminating in the first instance those pheasants—using the term in its widest sense—which have been tried and found wanting from the practical preserver's point of view, and then dealing with those which have proved their merit. Of the really true pheasants, the Persian Pheasant (*Phasianus persicus*), the Siberian Pheasant (*P. tarimensis*), and Talisch's Pheasant (*P. talischensis*) must be at once put to one side, for although interesting enough as new species, they are much too close to our original stock of *colchicus* to render it worth while crossing them with it. In other words, we have in the true-bred, old English bird so-called,

of pure strain, a pheasant which no crossing with the three above-named kinds would improve. They will all freely cross with either the above, *torquatus*, or *versicolor*, and the crosses produce fertile offspring. They will do this also amongst themselves; but unless the preserver be of a mind and possess the means and facility to keep and to rear these pheasants separately as aviary birds and turn them *sponte suâ* into his coverts, there is otherwise nothing to be gained by the proceeding.

The Prince of Wales' Pheasant (*P. principalis*) is a species of not very recent introduction, and is one which may with every advantage be employed by the all-round preserver as an improvement upon, or addition to, his ordinary stock. True that general success has not followed its crossing with the ordinary breeds, but I put this down to bad management or probably to the inferiority of the birds with which it has sometimes been tried. It is a handsome, hardy, quick-flying, true species, and ought in good hands to prove an acquisition wherever tried; but there are preserves where such an amount of indiscriminate crossing of *colchicus*, *torquatus*, and *versicolor* has been permitted, that nothing more than a race of mongrel birds has been produced, incapable of improvement and insensible to new influence. Amidst a stock of this kindred nothing would exert a beneficial influence except the shot-gun, freely applied.

Probably at the present time we have nothing better in the way of fresh type and fresh blood than the Mongolian Pheasant (*P. mongolicus*). For really improving a stock of ordinary pheasants which has degenerated alike in stamp, stamina, and fertility, the Mongolian species may be thoroughly relied upon. In connection with its introduction preservers in general are fortunate enough to have the experience of more than one large preserver as proof

of the suitability of this pheasant for all the purposes necessary to either an addition to our list of game-birds, or as a means of improving the general stock. Thanks to the courtesy of the Honourable Walter Rothschild, I am able to supply the reader with the results of his extensive trials of the Mongolian Pheasant upon his large preserves at Tring Park, and it will probably be much to the point if I give them in his own words :

“ At Tring we have had experience of acclimatisation only with one foreign pheasant on a large scale: the Mongolian Pheasant. This bird crosses freely with the ordinary pheasants, and pure-bred, half-bred, and three-quarters-bred birds alike are very early, strong flyers, and generally much larger than an ordinary pheasant. This year (1905) there have been killed over 2000 pheasants having various crosses of Mongolian birds ranging from one-eighth to seven-eighths, the latter differing only from pure Mongolian by the slightly spotted rump. We have at the moment of writing (December, 1905) about 70 hens and 30 cocks pure Mongolian Pheasants, and about 150 hens and 100 cocks seven-eighths Mongolian in our breeding-pens.

“ We find all crosses quite as fertile as, if not more so than, pure birds. The Mongolian Pheasant is certainly a most useful introduction, and both pure-bred and crosses give a much better sporting bird and one of a much larger average size than the ordinary pheasant, which is a mongrel mixture of the true pheasant, the Chinese Ring-necked Pheasant, and the green Japanese Pheasant.”

I do not think that I can add anything to the foregoing which would tend to recommend the Mongolian bird further to the general preserver than what the Honourable Walter Rothschild has been good enough to allow me to publish. Here we have the precise results of extensive

and prolonged trials, infinitely more valuable to the preserver than small experiments made with aviary birds.

It is interesting to note that our authority holds a rather poor opinion of the ordinary run of pheasants in British preserves, a fact that I have already pointed out in earlier portions of this work, and also, if I may be permitted to mention it, in repeated contributions to sporting literature.

Experiments with the Mongolian Pheasant have been made successfully in other portions of the country, and there is no reason to doubt that it would serve its purpose equally well upon Northern and Scottish preserves as in South and East Anglia.

Before leaving the subject of the Mongolian Pheasant, I should like to add one or two items of valuable general interest which have also been communicated to me from the owner of Tring Park. He gives it as his opinion as the result of his wide experience that—

“The best of the true pheasants still to be introduced are the Oxus Pheasant (*P. chrysomelas*), the Kohinoor Pheasant (*P. strauchi*), and the Ladah (Yarkand) Pheasant (*P. shawi*).

“I have personal experience that the common, Talisch, Ringed (*P. gmelini*, not *P. torquatus* in this instance), Mongolian, and Japanese Pheasants breed indiscriminately among themselves, and are fertile. The Persian and Siberian, like Talisch's, are too close to *colchicus* to make it worth while bothering about them.”

As far as the main purposes of the average preserver are concerned, it is not necessary to go further at present into the matter of new species suitable for acclimatisation with a view to the improvement of the present stock or their maintenance as additional birds in covert. There are, however, several other species to which it is necessary to refer. These are for the most part birds which, to make

any hand of, must be bred in aviaries or pens and be turned away season after season, if they be intended to provide a feature of the quarry of the preserve. Practically all of them are of polygamous habit, but many cannot be relied upon for more than one hen, even of their own species, but this disability cannot be said to apply to any extent to Lady Amherst's Pheasant (*P. amherstia*) or Sœmmerring's Pheasant (*P. sœmmerringi*). These two latter are both very beautiful birds, and are suitable for crossing with the ordinary breeds; but they are better when bred by themselves and turned away. The latter, known also as the Copper Pheasant, is a first-class sporting bird, and hardy, whilst the same may be said of the Golden (*Chrysolophus pictus*) and the Silver Pheasants (*Euplocamus nycthemerus*), though they do not provide the same mark as Sœmmerring's or crosses from it. Impeyans, Monauls, Tragopans, and Elliot's Pheasant. *P. ellioti*) will also do well enough in covert when turned away, but it is necessary to regard most of these as fancy pheasants, suited well enough to fulfil exceptional requirements, but of no great practical value to the ordinary preserver. Wherever the preserve may be of a park-like character, or contains park lands, these pheasants may be turned to much advantage, both for purposes of sport and as a special means of adornment for lands of the character named. It is only possible to maintain a moderate head of birds upon them, and, as a rule, the character of such woodlands is more suited to the peculiarities of most of these fancy species than are the closer and wilder ones which constitute the main pheasant coverts. The value of these fancy birds is, too, considerably higher, and it is not, as a rule, within the means of the ordinary preserver to extend his desires to such rather expensive luxuries.

It is, of course, necessary to maintain the parent stock

of these pheasants in separate pens or aviaries; they require, as a rule, different treatment and management, and possess peculiarities of disposition and habit which may render them more amenable to handling in confinement than ordinary birds; or the reverse may be the case. To mention a few points in this respect: thus the Golden Pheasant is very prone to persecute his hen if the place of confinement be small, and the hen bird will equally try to destroy her eggs at times under similar conditions. The same remark applies to the hen Silver Pheasant, although these birds tend to become tamer than most others of their kind. The Amherst Pheasant much resembles the Golden in its habits, and so on. It is, of course, impossible to go into detail of all these little but important matters in connection with all the individual species referred to, and it must suffice to say that in the main they are not very much more difficult to deal with than ordinary penned birds provided the special accommodation which they require is accorded them.

In concluding this chapter, I may repeat that there is ample room for improving the general run of pheasants, and plenty of opportunity for adding to the small number of species which at present constitute the main stock of British preserves. At the same time, anything of the kind requires undertaking with a full knowledge of the end in view and the means available to accomplish it.



CHAPTER II.

PHEASANTS: Introduction upon an Estate.

THOSE who are about to introduce or to commence preserving pheasants on an estate where hitherto there have been no birds, or at least extremely few, should not decide upon so doing unless they have previously satisfied themselves that the locality is a suitable one. As a rule it is the apparent suitability of an estate that gives rise to the desire to raise a stock of pheasants on it. The general features required render a lengthy description of the qualities proper to a pheasant-preserve unnecessary.

The progress of agriculture formerly tended to lessen steadily the area of covert everywhere; whilst with the continued lessening of the margin of profit on farming, everything in the nature of outlying cover, such as wide and untrimmed hedges, spinneys, small patches of woodland and the like, has had to give way before the demands of the agriculturist. There are, however, very few districts throughout the country unmarked by suitable sites for pheasant-preserves, the only requisites being a sufficiency of woodland, coppice, and other coverts, together with arable land, grass land, brake, and common.

The best coverts are those of young trees, where spruce, larch, other firs, oak, and ash are well commingled, the spruce having the advantage if possible in point of numbers; and beneath these a fairly abundant undergrowth of hazel, holly, and other evergreen shrubs such as laurel.

Together with the ubiquitous bramble and bracken, these trees would present a shelter alluring to the birds. A chapter will be devoted later to the description, general management, and improvement of pheasant-coverts, so that this part of the matter can be left for the present.

The introduction of pheasants upon land hitherto destitute alike either of game-birds or of any form of preserving is a task which is generally difficult and nearly always expensive.

The chief difficulties which will present themselves on the first attempt to raise a stock of pheasants are such as may be expected under the circumstances. In the first place, we have coverts into which we turn a number of birds; they find none of their kind already established there, and naturally seek to find other habitats more suited to their natural likings. Then, being strange to the place, they are more liable to be poached off quickly, unless strict vigilance be kept, while vermin of all sorts will have previously had their own free will to multiply to an unlimited extent, and will make their presence felt by wholesale destruction of the game. Consequently, the first steps taken must be to destroy the vermin as far as possible, at the same time using every endeavour to prevent the birds from straying off. The most effective and practical manner of gaining this end is to rear the nucleus of one's stock in a semi-wild state, so that the young birds, never knowing otherwise, adapt themselves immediately to the place and attract any old and wild birds which may be upon the place by their company. The vermin is best and most easily cleared out to a large extent before any birds are turned down or reared, and, this matter once satisfactorily disposed of, a determination can be arrived at as to the plan for raising the prospective head of birds.

The purchase of pheasants "to turn down" is invariably a very unsatisfactory mode of commencing operations. Sometimes the birds when turned away, if carefully watched and considerably tended with sufficient allurements in the shape of daily supplies of tasty food, may be induced to accommodate themselves to their new domicile; but they never seem to settle down, or take to the place, and invariably decrease to about five-sixths their original number after one winter. It will be necessary to deal with two sets of circumstances: one where actually there are no pheasants at all, the other where there is a small sprinkling already established.

For the present it will suffice to show how a small head of birds may be worked up upon what may be a small estate or a portion of a larger one, with a view to a steady increase of the stock and an extension of the area placed under preservation. It must be admitted that there are more ways than one of going to work, but inasmuch as the owner of a small shoot must be considered in these pages as well as the prospective preserver upon a large scale, if the simple and effective manner of making a beginning now to be described fail to command approval the more elaborate methods described subsequently can be applied in modified form.

A practical and quickly successful way is to form a large rough pen for the rearing of some birds in a covert chosen for its suitability for the purpose. Any small covert possessing most of the features already detailed, and situated within easy distance and observation of the owner's or keeper's dwelling, will serve for the purpose. The actual site selected for the pen must be well towards the centre of the covert if not a very large one of, say, five to eight acres extent, and there should be an abundance of low cover, such as small fir saplings, hollies, bushes, and

briars. To accommodate a dozen or fifteen hens a space about 30yds. by 15yds. must be enclosed with wire netting, attached to posts some 8ft. out of the ground; the netting to be 1in. mesh to 3ft. high, and 2in. mesh for the remainder. At the centre of one of the sides a door must be provided, and the whole be covered with bird-proof tanned twine netting.

The soil within the pen must be dry, well drained, and produce a fair growth of healthy verdure; whilst if it be possible to choose a site for it which permits of a small ditch of running water passing, or being deflected through the pen, an advantage is gained. If birds from pens are turned in, then the months of February or March may be selected for the purpose; if wild birds (young) be chosen, then September is the proper time. Obviously the latter choice involves greater trouble, and it is not certain that there is always something gained by it. The circumstances of the case must govern this point. The correct proportion is one cock to five or six hens, but in instances where the size of the pen is materially increased, a proportion of one male to four females will be found necessary. It is advisable to cut their wings before turning them into the pen, and it will be found necessary to repeat the process at intervals of a fortnight or so until the birds become reconciled to their confinement and learn that they cannot escape by upward flight. The operation of cutting the wings is a simple one, and is best undertaken after they have been turned into the pen.

The birds are best and most easily caught at dusk or dark, and a couple of persons with a lantern can soon catch and cut the wings of the pheasants, without causing them much anxiety. Of course, later on, when some of the birds are sitting, there is no advantage gained by disturbing them. The hens placed in this

enclosure must be fed regularly and carefully, and it is important that a proper system of feeding be decided on and carried out. The birds naturally find a certain amount of food in an enclosure of the kind advocated, but still their semi-domesticated state will require a large amount of attention to be bestowed on them. Feeding-time should be but twice a day—first thing in the morning, and about two or three hours before dark. The nature and mode of feeding will be fully detailed in a subsequent chapter dealing with the treatment of penned birds.

When confined in this manner, good healthy first- and second-year hens lay from twenty or thirty eggs apiece, and although some of them may drop them anywhere about the pen, the majority will resort daily to some particular spot which will do duty for a nest, consequently they will be easily collected. Owing to the size of the enclosure, most of the hens will commence their laying and nesting operations in the same or similar manner to unrestrained birds, forming their nids, and proceeding in the usual way. The aim of the mode of introducing pheasants here described is that, in addition to the birds hand-reared from eggs laid in the pen, each hen may herself hatch off a nest of youngsters, and rear them, thus producing a small stock of practically wild birds. In a natural state the pheasant rarely broods more than twelve eggs, but will occasionally exceed that number. Generally all are hatched out, but the bird is a bad mother, and seems to be more content with five or six chicks reared than the full number. Consequently, if the eggs in each nest in the pen be daily taken until about five-and-twenty or thirty per bird have been obtained, the nests may then be left for the hen to complete her sitting and hatch off. One should, of course, be careful to note that the bird is sitting, otherwise the eggs would be wasted. They must be collected during

laying-time twice a day—in the morning between ten and eleven, and in the afternoon between four and five. When collecting, put them small end downwards in a box of bran. They should be kept in a tray of this, and be turned every day. One should then have a number of farmyard hens of the approved type ready to sit, and as sittings of thirteen to fifteen are made up, the hens can be set. As soon as the young birds are sufficiently matured to turn down this can be done. They are best placed for a fortnight or so in the enclosure in the covert before having entire range of the place. The several hatchings of the penned hen pheasants are left to the tender mercies of the mother to be reared, and are also given full liberty as soon as their size and strength warrant it. This mode of introducing pheasants represents the simplest and most reasonable manner of making a start in pheasant-preserving. Some points which may not be clear to the novice will be discussed in subsequent chapters when dealing with matters on a larger scale.

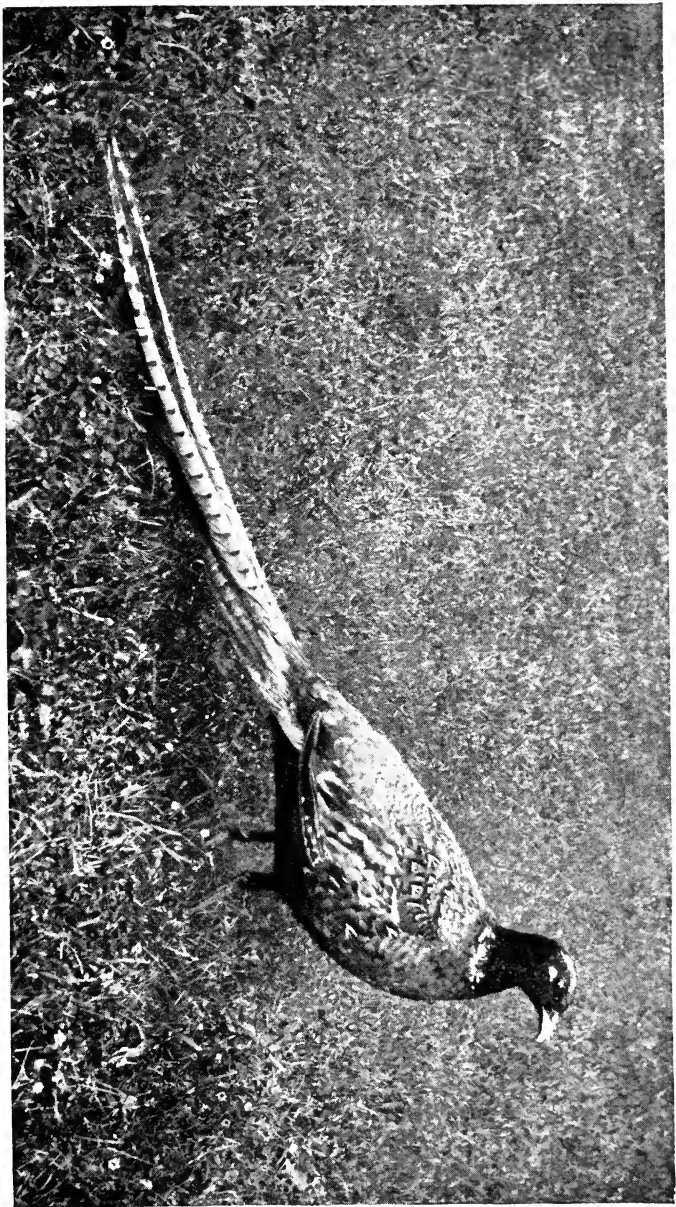


CHAPTER III.

PHEASANTS : Maintenance and Increase of Stock.

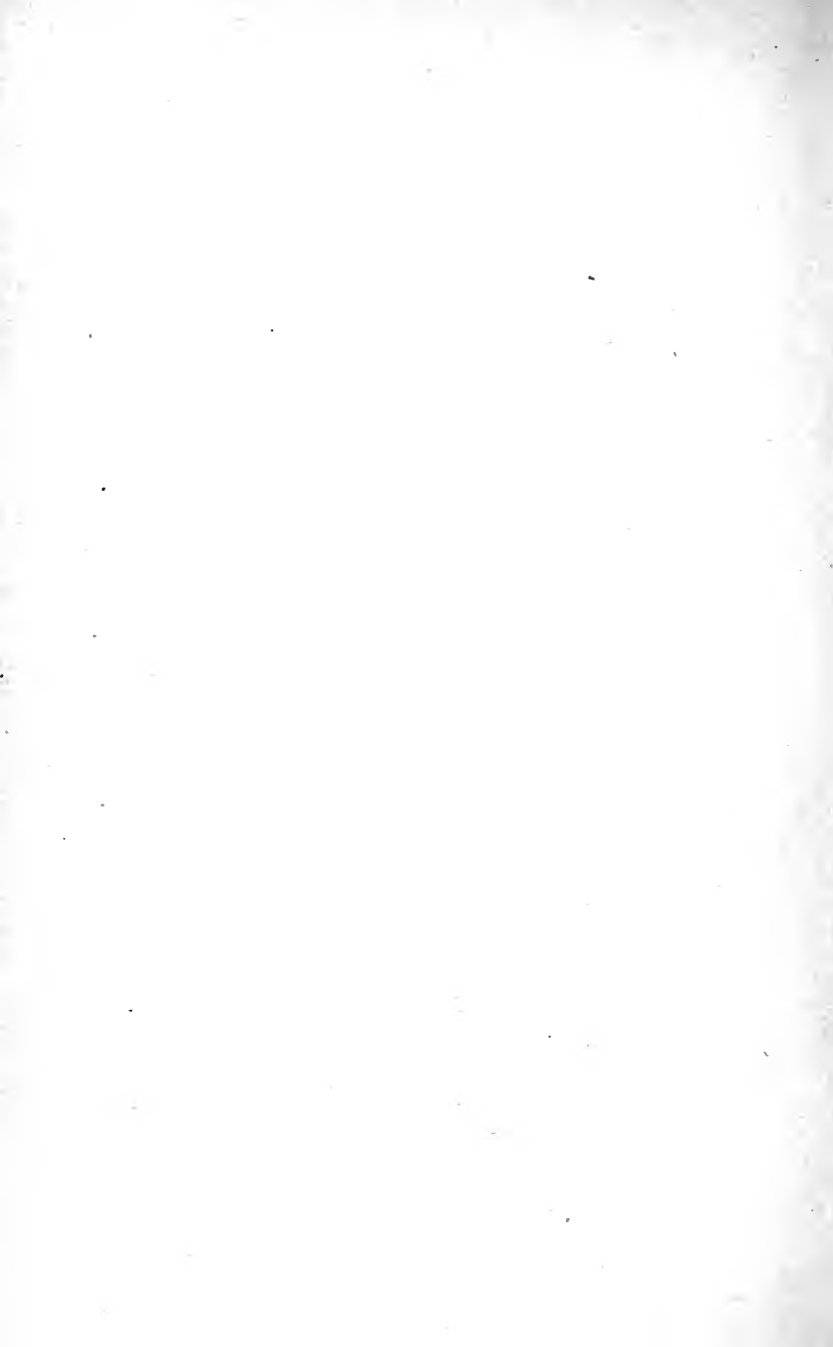
PRESERVES which contain a fair sprinkling of pheasants, sufficient to give, say, a month of good "rough shooting," will, unless the ground be extremely unfavourable, generally make up in natural increase any numerical diminution which the gun of the sportsman may cause; consequently, the only aids which are necessary or advisable, were it not desired to raise the head of birds above a certain limit, can take the shape of an introduction of fresh blood, either by birds exchanged from a distance, or by the obtaining of eggs from distantly situated localities, and hatching them out, while in those years when no fresh strain is desirable, one can profit by the fact of pheasants laying many more eggs than they rear young birds, and obtain from the preserves a necessary complement of such and hand-rear from them. It might also be just as satisfactory to raise the necessary fresh stock in a covert pen after the nature of that described in the last chapter. For this there is no need to give further instructions, as any modifications would suggest themselves to the preserver when necessary. Upon the other hand, a proper system with birds penned for laying purposes, and arrangements made for hand-rearing upon a suitable scale, is likely to prove of much greater advantage.

The most practical, and at the same time the most satisfactory, manner of maintaining the same quantity of



REEVES'-RING-NECKED PHEASANT

The Pheasant illustrated is the result of a second cross between a Reeves' torquatus cock bird and a torquatus hen. It is one of two birds obtained from 70 eggs; all the others were unfertile.



pheasants annually, is to obtain eggs from the preserves in the spring, hatch them under fowls, hand-rear, and turn them out in the summer. In order to supply a sufficiency of eggs, the preserver must, immediately laying time comes round, carefully search all his coverts for nests, looking thoroughly over them, and noting with exactitude the situation of every nid discovered. According to what he learns from such examination as to whether the birds are laying freely or not, so is he able to determine to what extent the nests may be deprived of eggs. If these are being regularly deposited, and things appear to be going on briskly, there can be no harm in taking from each nest day by day up to six or seven eggs. If irregularity in laying be observable, then four or five are sufficient to obtain per nest. In any case, the eggs are collected daily and carefully transported to a place of safety till a large enough number is obtained on which to set the first batch of hens. If necessary, a further quantity is procured for other hens which may be available, but the difficulty is oftener to obtain a sufficient number of broody hens than the eggs.

Buying eggs annually in place of obtaining them as already described would only become necessary when it is desired to raise the stock at once to so large a number that one's own preserve would not provide the requisite quantity. The bought eggs are of course set off under hens, and the chicks hand-reared and turned out as soon as they are matured enough to look after themselves.

Buying birds to turn down is only necessary when the present stock of pheasants appears to be rapidly deteriorating in quality and healthiness. In such case the mere obtaining of eggs from distant preserves and hatching them out is scarcely a sufficiently speedy process, and it is often a better plan to purchase or to exchange a fairly

large number of birds with some friendly preserver whose estate is situate in a distant county. Possibly he may also desire a change of blood in his birds, hence the transaction would be mutually desirable. In purchasing fresh birds some discrimination is necessary. Tame or semi-domesticated birds are not worth much as a rule, and there is nothing like a good healthy lot of carefully caught up wild birds. Moreover, it is always preferable to have an equal number of cock and hen pheasants, in place of the usually recommended lot of cock birds only. The best time of year to turn these birds down is at the end of February or beginning of March, six weeks or a month after the shooting season closes. They will then have time to settle down before mating time comes on. At first they will require specially feeding a little, but it is best to let them eventually find their way with the rest, and so spread well about.

One of the greatest aids to a natural increase of birds is thorough elimination of all kinds of vermin from the coverts. It has always been a maxim with preservers that "to kill vermin is to breed game"; and unless all furred and feathered vermin is well killed down, there is no chance of maintaining a stock of pheasants, much less increasing it. Poaching, of course, must be kept down, and not only actual night poaching, but the systematic robbery of birds and eggs which will obtain if the preserver does not properly look after his coverts.

A more extended consideration of these several points must, however, be left over for the present. Suffice it that what may be described as the preliminary steps necessary to the establishing and maintenance of a head of pheasants upon modest conditions have been dealt with and made clear.

CHAPTER IV.

PHEASANTS: The Higher Preservation.—Penned Birds for Egg-Supply.—Management of Penned Birds,—Construction of Pens.—Eggs from Wild Birds.

IN the foregoing chapters has been shown how pheasants may be introduced and increased upon a moderate scale and under limited conditions. It is now necessary to consider matters from a more extended point of view. To this end it is advisable to hold a brief review of what may be termed the higher preservation—in other words, the production and maintenance of the largest head of game an estate will support.

A preserve of the kind indicated may consist of one or several estates or manors. It may be one large self-contained estate, or it may be made up of many estates, each characterised as a beat, or themselves divided into one or more beats. Whatever the constitution of the preserve, whether for the whole or for parts, the system of going to work is mainly identical, and should be such that it is self-contained and, if possible, entirely self-supporting. By this is meant—as far as pheasants are concerned—that everything reared upon the preserve should be produced from eggs provided by the preserve. It is impossible in a work of this kind to ignore the fact that a comparatively new feature in connection with game-preserving has arisen of late years in the remarkable

influence which the great number of game-farms now exercise upon game-preserving in general and pheasant-raising in particular. Whether the position is beneficial or not to the great interests involved depends upon the point of view, but without reflecting in any way upon the merits or otherwise of these enterprises, it is necessary to state that the systems of game-rearing set out in these pages are those in which the game-farm only figures as a useful resource when, through the outbreak of disease or by reason of other patent cause, the possibilities of the preserve itself have been rendered nugatory.

In what I have chosen to term the higher preservation the matter of pheasant-production resolves itself into two heads: egg-supply and hand-rearing. Other matters largely depend upon these points, and determine themselves according to the system adopted.

Two sources of egg-supply are open to the preserver of pheasants upon a large scale: the one from birds penned specially for the purpose of providing eggs to be hatched and reared from; the other the collection of eggs from the wild birds' nests to be similarly dealt with. Or the two sources may be linked together, one being made subservient to the other. Taking it for granted that the axiom that every pheasant-preserve should be self-supporting as regards the egg-supply be accepted, the means to be adopted to make this provision must depend upon the extent of the preserve. For a small estate such as would come under the denomination a one-man shoot, the arrangements made need partake of but a very simple character, and need not be of other than semi-permanent character. Coming to larger preserves, however, where many hundreds of birds, approximating thousands or more, have to be reared, something conceived on a larger and more permanent basis is required; whilst when the question of

the egg-supply for large sporting estates, comprising several or many beats is involved, the matter assumes an importance which is scarcely second to that of the hand-rearing of the birds itself.

We may dismiss with a few words the case of a preserve requiring annually, or maybe only occasionally, a hundred or so of eggs. If the means described in the previous chapters be insufficient of themselves, or as extended to meet increased requirements, then resort may be made to some reputable game-farm for the eggs necessary to make up an adequate supply. Coming, however, to the case of a preserve requiring, say, a thousand eggs annually, extending over a period of several years, something more than a makeshift is desirable and necessary in order that a proper supply may be maintained. A proper system must be adopted based upon the requirements and conditions of each individual preserve, and calculated as to expense upon the basis that the eggs shall be produced at an average cost of £2 to 30s. per 100 over a series of years. Ordinary pheasants penned for laying purposes may be calculated to produce a minimum of 100 eggs per pen of six birds—one cock and five hens. They should certainly produce no less, and under favourable circumstances ought to produce from 25 per cent. to 50 per cent. more. I place the figures at their lowest estimate, as in this and all other matters relating to game-rearing maximum anticipations invariably prove fallacious.

According to the number of eggs required, so should the number of pens be determined. Thus, six pens of six birds each might, under exceptionally favourable circumstances, produce 1000 eggs. It would be far wiser, however, to provide eight pens with birds and two in reserve. However many eggs be required, it is impossible,

whilst remaining within the limits of reasonable anticipation, to go beyond this basis of calculation. Nor is there anything to be gained by varying the proportion of hens to cocks. The one given generally proves the most productive. The size of the pens should not be less than 20ft. square, and may be increased with advantage, but should not necessarily exceed 30ft. square. They should be not less than 6ft. and not more than 8ft. high. These are indispensable points in the construction of pens for laying pheasants. Other matters in connection with them admit of being varied according to circumstances, but these do not.

The mode of constructing the laying-pens may be varied according to circumstances, but the class of pen to be presently described is thoroughly suitable for the purpose, and when strongly put together will stand without serious repairs for a number of years. A series of pens adjoining one another is better than a number of detached ones, whilst it has the further advantage of reducing the cost per pen. The question of movable pens is one which need not necessarily arise, but inasmuch as some soils and situations will not permit of birds thriving for more than one or at most two seasons upon the same piece of ground, the class of pen here recommended is one that can be constructed with a view to removal when necessary; the sides are then made in sections, and the corner standards are independent of the framework of the pens.

An individual pen of this description of the measurements already given would have its sides formed either of 2in. lath-wood, set up vertically 2in. apart, or of 2in. wire netting, stretched over a framework, or partly of one material and partly of the other. In cold districts the first-named material is distinctly to be preferred, and where a series of pens are set up, the backs—all of them

facing the north—and the outer sides of the two end ones, may also be formed of the lath-work. Around the bottoms of the pens galvanised sheet-iron (not corrugated) should be fixed to the height of at least 2ft. or 2ft. 6in. above the ground. This sheet-iron ought to be fixed independently, so that it can be let down 3in. to 6in. into the ground for the purpose of preventing the ingress of vermin. A door of similar construction to the side in which it is placed must be provided for each pen. The tops of the pens must be covered with tanned bird-

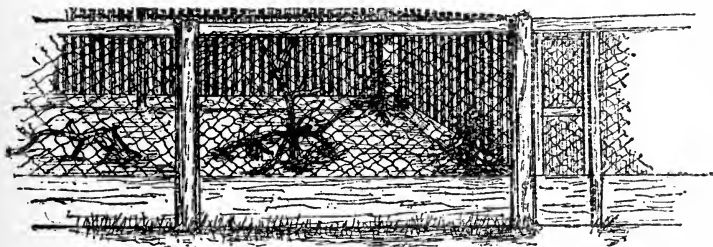


Fig. I.—Pen for Laying Pheasants.

proof twine netting, properly stretched, so that it does not sag unnecessarily in the centre of each pen (Fig. 1).

It will be found in practice when more than three pens are required that, as a rule, it is preferable beyond the reason of cost to bulk them together, *i.e.*, erect them attached to one another. Thus, if there were six required, there would be two rows of three, each backing on to one another, and so on. But, in any case, the pens should all front to the south, lath-work sides being placed to the north of each row of pens, and wholly or partly on the sides.

Within each pen a large branch of a tree suitably fashioned should be set up in the centre; or it may be

replaced or supplemented by a large tree-root, so placed that the birds can find shelter or hiding beneath it. If possible, some low thick spruce trees may be planted, one in each corner of each pen, 3ft. out from the sides; failing this, a collection of furze and close-lying tree-boughs may be placed in two or three of the corners, thus forming a substitute for the cover the growing trees would provide. Preferably the pens should be erected some time before being used; in fact, if the preserver think fit, they may very well be put up in the autumn, and this gives the growing shrubs planted within their limits time to take good hold. They may also be found to serve a useful purpose in the meanwhile.

The site chosen should, if any way possible, be one facing and sloping towards the south. The ground should be well drained and fruitful, but upon no account be a clay soil. It is not necessary that it should be arid, but certainly it must not be damp, and if these characteristics be secured, pens so situated will serve for several years provided that as soon as the nesting-season is over, the ground within be dug deeply—two spits if possible—and well treated with salt and lime. It may then be levelled and be re-sown if needed with a suitable form of grass-seed. This mode of dealing with the pens involves the removal of the birds; but if it be necessary to retain any of them, the advantage of one or two spare pens becomes apparent.

An alternative plan for securing mobility in the pens which has been adopted with success, and which may be applied with advantage in some instances, is to construct the pens separately, but with one corner standard heavier and stronger than the others, the body of the pen being so arranged that it can be slued round the centre standard in such manner that the pen is bodily removed to fresh

ground at selected intervals without the necessity of taking it to pieces. The advantages of this plan are chiefly apparent when the soil is of such character as to wear or to sicken quickly. Upon really sound and suitable ground I do not see that there is very much to be gained by its adoption.

Upon the whole, I am of opinion that there is little improvement capable of being made upon this class of pen, though where expense is not a serious consideration, the nature and quality of the materials may be improved upon, but the principle remains the same.

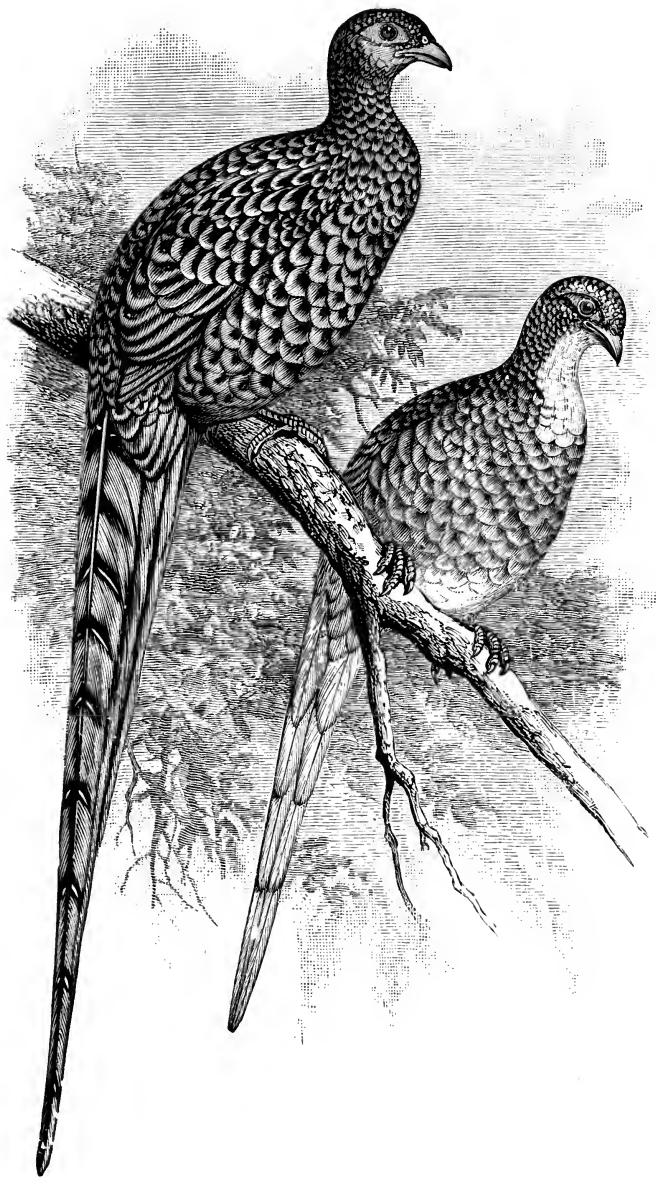
The pheasants for laying should be caught up and turned into these pens early in February, although were it not for certain disadvantages attaching to the alternative I should recommend the catching up of birds immediately before shooting commences. This, however, means keeping the hens in captivity all through the winter months. The main disadvantage accruing to the practice of employing February-caught birds is that many hen pheasants have their fertility destroyed or impaired by shot or accident during the shooting season, which imperfections only become apparent when the laying season commences, or even when hatching is in progress. To counteract this probability it is to be recommended that 10 per cent. more hens be caught up than it is intended to draw eggs from, so as to have a reserve of penned birds to replace the produce of any unfertile hens, and so keep up the supply of early eggs, because, after all, it is the advantage in this latter respect which penned birds possess over wild ones that adds so considerably to the merits of the practice.

The hens penned should be second-year birds, strong, healthy, and chosen upon exactly the same lines which weigh with the poultry-keeper in selecting his pullets for laying. See that the breasts are straight and true, the

abdomen is full and well developed around the vent, that the eyes are clear and the feathering around them and the beak is healthy. Birds not possessing these qualifications should be rejected ; but unless the preserver or his keeper has acquired practical experience or instruction in these matters, it is difficult to discriminate upon the points named.

Presuming that the hen birds have all been drawn from the preserver's own coverts, then the cock birds provided for them should be obtained from other sources. They, in their turn, must be second-season birds also, and of pure breed of their sort. Of course, it is perfectly feasible that birds of opposite sexes from the same coverts may be so far unrelated to prove sufficiently productive of sound progeny ; but there are many chances that such may not be the case, and it being so easy a matter to exchange cock birds with other preservers, or to obtain them of undoubted parentage from other reputable and trustworthy sources of supply, there is really no reason for failing to make this provision. Nor is it advisable to lose sight of the fact that in stocking the laying-pens the opportunity should be taken to acquire some percentage of pure hens from other sources as well. It is a fact largely overlooked that it is just as easy—and it is frequently as effective—to renew the blood of the pheasant stock through the hens as through the cocks. I should therefore strongly advise preservers to bear this fact in mind, and even if they do not avail themselves of it in the first season, certainly to do so in the second or succeeding ones.

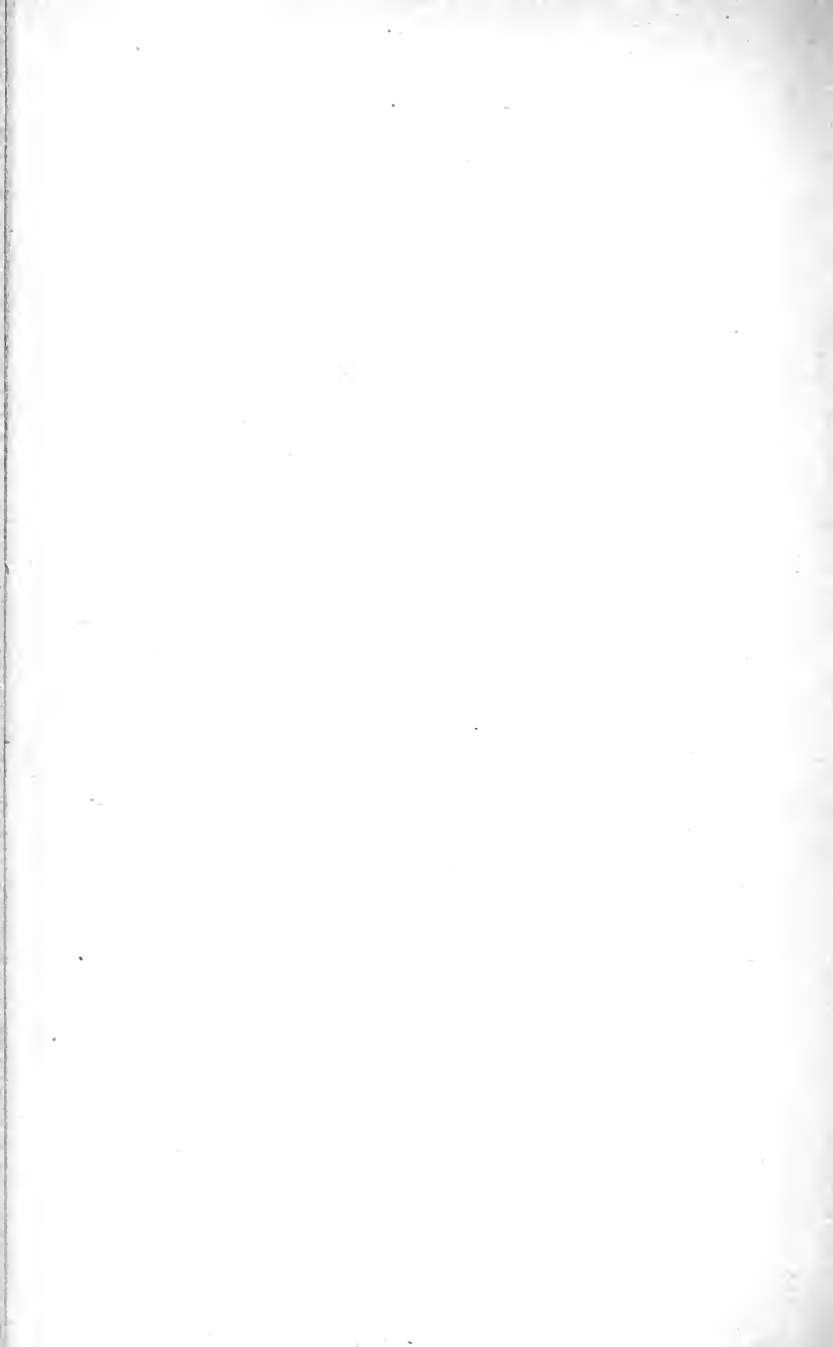
Sufficient has been said in the dealing with pheasant crosses for the purposes of the ordinary preserver, but it may be added here that, if the services of a *versicolor* cock be employed for the penned birds, he will suffice for



COPPER OR SCERMERRING'S PHEASANT

(PHASIANUS SCERMERRINGII)

A Japanese species that promises to make a good covert bird. The long, barred tail is a conspicuous feature.



from ten to thirty hens, and may be transferred from pen to pen in turn.

The treatment of the penned birds is an all-important matter, because upon the correct manner of handling depends the health of the birds, and consequently their productiveness. They require to be fed well, but not fattened up, and with little exception the ordinary diet recommended for wild birds will mainly suffice. An addition, however, should be made by giving a good feed of some well-reputed pheasant meal in the morning, and it is necessary to add that maize should be supplied with a sparing hand. Two feeds a day are sufficient—the meal in the morning, the dry grain in the afternoon. During all the time they are penned some green food and roots should be given twice or thrice a week. Chopped mangel, artichoke, lettuce, and cabbage are the most suitable, and if the turf within the pens wears and dries off, throw in a big clod of good rich turf from time to time. A fairly liberal supply of burnt earth, lime, or old mortar, mixed with some road sand, must be maintained, as well as one or other of the shell-making compounds supplied by nearly all purveyors of game-feeding materials.

Penned birds require to be kept occupied as far as possible; it is therefore necessary to see that the pens do not become waste and unattractive to them. Fresh water, in regularly cleaned troughs, should be given twice a day. Enamelled iron-ware is the best kind of trough, and it should be cleansed every time fresh spring water is given. If bad weather sets in, cold and wet in continuance, see that the birds do not suffer, and give them what extra shelter can be contrived if they appear bedraggled and weather-beaten.

As soon as the hens show signs of laying, place an

artificial pheasant's-egg under each shrub or bunch of cover, and leave it there during the laying time. Remove the eggs twice daily, at feeding-time, placing them in carrying-boxes containing bran, and with their small ends downwards.

Penned pheasants should be disturbed as little as possible, be fed and attended to by the same person, who should signal his coming at feeding-times and otherwise by whistling. Light-coloured clothes are better than dark, and when the pens are entered, always go round them in the same direction, avoiding sudden movements as far as possible. The laying-pens should be well protected from annoyance by poaching dogs and cats; they must be well guarded according to their position, either by a watcher or by guard dogs attached to wires running round the pens at a suitable distance. It must be remembered that upon the safety and success of the laying-pens depends the outcome of the shooting season, and no possibility must be offered or permitted for the happening of failure.

Whether regarded as a material source of supply or as entirely auxiliary, the eggs obtainable from the nests of the wild birds cannot be entirely ignored upon the big preserves, whilst they must provide the main supply for hand-rearing upon the small ones. It behoves every game-keeper to know the whereabouts of as nearly all the wild pheasants' nests as is reasonably possible; consequently, the search for them is no additional item of duty except that it requires to be made more assiduously and at a very early date. As a rule, the end of April is sufficiently early for the searching to commence, but the preserver must be guided by the state of the season and the movements of his birds. This finding of the wild birds' nests is, however, no easy matter, and a keeper requires to be also a good woodman to become adept at

the business. Some seasons nests are much easier to find than at others; it depends upon the state of the undergrowth. In any case it is impossible to give any hints of value upon the subject; it is a matter to be learnt only by experience. All that can be said upon the subject is that endeavour should be made to disturb the laying birds as little as possible, take a mental note of the time each bird is on or off, and shape the work accordingly. When a nest is discovered, the eggs are removed and replaced by artificial ones, and when a sufficient supply has been drawn from each nest at the subsequent daily visits, either the nest may be left to be completed, or be destroyed—according to how many have been taken—the hen then making and completing a fresh nidé, or maybe laying to some other one she may discover, or possibly not nesting at all. A good deal of discrimination and discretion is necessary in the work, points to be avoided being the making of too regular a round and consequent beaten track from nest to nest, unnecessary observance of the hens when occupied upon their nest, and the too careless interference with and movement of any covering material left by the laying bird.

Before leaving this portion of the subject, reference must be made to those clutches already partly incubated which are found later in the season, and which it is considered advisable to remove for completion of incubation under foster-hens. They require careful handling when nearing hatching-out point (easily distinguishable by the peculiar "rattle" the eggs make when being transferred), so that it is advisable always to have one or two broody hens on hand for the purpose.

It must always be borne in mind that in the foster-hens there exists a most serious element of danger to the whole stock of pheasants sought to be reared, inasmuch as

through them the dread scourge enteritis may be introduced. It is therefore necessary when making the selection of the hens that the cleanest and healthiest birds should be secured. Unless specially bred and reared for the purpose, under conditions which preclude any possibility of the germs of the disease existing amongst them, the foster-hens must be selected from the cleanest and purest yards. As a rule, hens coming from some of the country cottages are much to be preferred to those from the farms, as the conditions under which the former are reared and kept are far more sanitary than those under which the latter are maintained. Before the hens are set, their feet should be washed and dipped into a 2 per cent. solution of carbolic acid. This process should be repeated before the eggs hatch out, and again occasionally after the broods are upon the rearing-field. At the same time a very fine spray should be thrown over the insides of the coops whilst the chicks are absent.

The necessity of following this advice closely will be made more apparent when the chapter on diseases is reached.



CHAPTER V.

PHEASANTS : Hand-rearing.—Hatching-Houses.—Hatching-Boxes.—Care of the Foster-Hen.

THE hand-rearing of pheasants for sport has developed to such an enormous extent of late years, and is carried on under such varying circumstances, that it would be quite impossible to include within the limits of this work detailed information as to what particular scheme of operations would be most applicable to each particular set of circumstances under which hand-rearing of pheasants may be pursued. It will be more profitable to follow the process through as applied to the rearing of, say, 1000 or 1500 birds, and point out as the matter proceeds where and how the general system evolved can be modified.

It being understood that, no matter what the number of birds being reared, they cannot all be hatched off at the same time, but must come forward in relays, it follows then that the first point for decision is how many clutches of eggs are to be set at one time, to be succeeded week by week by the other batches as they come along. Of course, endeavour must be made to have the birds as early as possible; but inasmuch as it rarely occurs that the arrangements are such that all birds can be brought off at the first hatching, it is advisable to extend the whole of the hatchings over five weeks, which, counting from about the first week in May, will see the last hatch of birds "off" by the middle of June; in other words, partridge-hatching

time. Counting seventeen eggs to the clutch, this would mean setting the hens in relays of twelve birds for each 1000 eggs intended to be hatched over the five weeks indicated. Let this, therefore, stand as the basis upon which the subject of hand-rearing has to be considered. Of course, if desired, this basis of operations can be modified, but I think that under ordinary circumstances the preserver will find this the most workable arrangement to adopt.

Before going further, we must revert to the matter of the eggs. As these are produced they must be placed in boxes filled with fresh bran, be laid upon their sides, and be turned half-round every day till they are required. Eggs laid upon the same date should be assembled together, and endeavour made when the time comes to make up the clutches of each hatch from eggs of about the same date. Arrangements must, of course, be made beforehand to have a sufficient supply of broody hens of the necessary type on hand. Any medium-sized, well-feathered, clean-legged fowl will serve; but in the case of large preserves it is advisable and profitable to run a poultry-yard in conjunction with the pheasant-rearing so as to be sure of having all that is required. In this case half-bred Silkies or Silver Wyandottes are the best strains to maintain, as they brood freely, and being also fairly good layers, there is always a plentiful supply of fresh eggs on hand. It is a poor plan to be dependent upon others for broody hens and for fresh eggs, and where any quantity of pheasants are reared, provision in this direction must be made beforehand, and in the manner named.

Reference may be here made to the use of incubators for pheasant-hatching, because it may be that the inexperienced preserver may be led into expense and disappointment in connection with them. There is no difficulty

about their use as far as hatching-out the eggs is concerned, but there the matter ends, as young pheasants will not take to the artificial mother : they stray away, become lost, hungry, and die. At the same time, a small incubator kept on hand will prove useful at times to complete the incubation of a forward clutch of eggs, or to hatch off a reserve for making-up broods to a level complement. Outside of these merits the incubator is of no great assistance to the pheasant-rearer.

Two methods of dealing with the sitting hens are open to the preserver. They may be either set in separate hatching-boxes in the open, or a suitably constructed or arranged hatching-house can be provided. Decision in this direction must be taken according to the conditions prevailing. The nearer Nature can be followed in regard to the incubation of the eggs, the better ; but if it be the case that the surroundings do not permit of the foster-hens being set out of doors under circumstances which will ensure their health and the necessary freedom from disturbance, as well as afford the conveniences for feeding and airing the hens when they come off their nests, then the provision of a suitable hatching-shed becomes necessary. Before dealing with this part of the subject, however, the question of hatching-boxes must receive attention, for, in any case, the same class of article is employed.

At the outset it is necessary to point out that, however wholesale the hatching of pheasant eggs may be effected, a series or long rows of hatching-boxes are quite opposed to the necessities of the case. Each box must be separate. The type does not signify so much, so long as the boxes are roomy and separate. True, the cost is greater, but the better hatching results will easily recompense any extra outlay. The main features are that they should be not less than 16in. square and 20in. high, inside measurement,

the bottoms must be open and covered with rat-proof wire-netting, and it must be possible to get at the hen from the top of the box. According to whether the hens are to be tethered or not when taken off for feeding, so the boxes must be fitted with a run or not—if the hens be set in the open or even in a hatching-shed; but if the latter be available the runs may be dispensed with. Hatching-boxes to meet the requirements named can be obtained from several manufacturers, but in case it is found more convenient, and possibly less expensive (which is doubtful), to have them made on the premises or at home, I annex a sketch of a suitable hatching-box (Fig. 2), with measurements and sufficient description to enable this to be done.

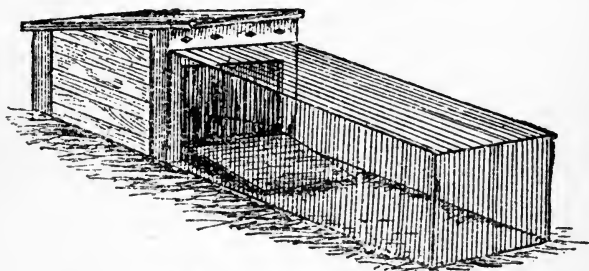


Fig. 2.—Hatching-Box and Run.

Measurements of Box : 16in. square by 20in. high.
,, Run : 2ft. 6in. by 16in.

In cases where it is necessary to resort to the provision of a hatching-house, it is always possible to adapt an already existing structure to the purpose, in which case it must be so arranged that it embodies the requisite points which go to make up a suitable erection of the kind. It must always be borne in mind that anything which does away entirely with the natural surroundings associated with the hatching of pheasants' eggs would not prove suitable.

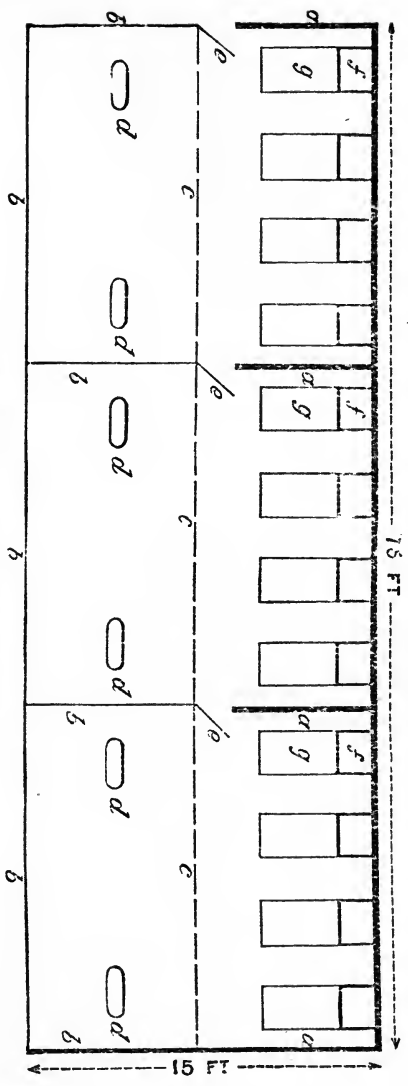


Fig. 3.—Ground-Plan of Hatching-House.

- a a a a, Wood.
- b b b b b b, Wire netting.
- c c c, Limit of roof.
- d d d d, Food- and Water-troughs.
- e e e, Doors.
- f f, Hatching-boxes and
- g g g, Runs to same.

At Fig. 3 is given the ground-plan of a hatching-house which can be erected at very moderate cost, and withal of substantial construction. Designed to be a permanent structure, it can be utilised at other times for many other purposes, such as aviaries for special kinds of pheasants, for storage of coops, runs, and other materials, or as a hospital for sick and ailing birds, mature or otherwise. The measurements are those suitable for twelve nesting-boxes, but would serve for half as many again if required. Further details of the construction are here given than are set down in the references. The back may be a stone or a brick wall, or even wood, as are the sides and divisions (*a a a a*), and should not extend right up to the roof, a space of 1ft. being left open. The side and front portions marked *b* are of wire netting, boarded up 2ft. high all round, as shown at Fig. 3; while the outer roof (*a*, Fig. 4) is of the same material. The inner roof (*b*, Fig. 4), which extends only half-way across the pen, is of board overlapped. At *e e e* (Fig. 3) are doors by which to pass from one division of the pen to another, the object of dividing them being that when the sitting hens are let off in the morning the worry and disadvantage which would accrue were the whole lot of hens turned off together, are avoided, or were it necessary to let out but two or three at a time. Furthermore, the small limits of the separate pens preclude any unruly hen from eluding capture when she shows a disposition to allow her eggs to become cool.

In a hatching-house of this description, although the boxes are figured as being each supplied with a run, the latter is not necessary in every case, although where the means exist, a run to every hatching-box is a decided acquisition. At the same time, they can be easily dispensed with.

Each box should be supplied with a square of clean, dry turf, sufficiently large that when it is gently forced down into position it forms a slight hollow in which the eggs are placed. The dimensions given are ample for the reception of the fifteen or seventeen forming the clutch, and the broody hens can be conveniently set upon them at such time in the morning after they have been fed. The doors of the boxes are then closed until feeding-time next day; but it is advisable to take an observation of them during the afternoon, so as to be assured that the hens are sitting comfortably and are quiet upon their nests.

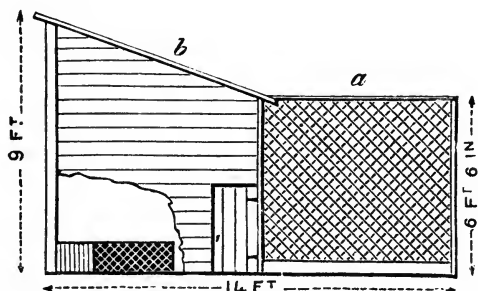


Fig. 4.—Section of Hatching-House.

Practically the same procedure obtains when the hens are set in the open air, but it naturally follows that care and discrimination are required in the choice of the position assigned for the nesting-boxes. The facilities at command in this respect will decide whether it is better to employ runs to the boxes or to tether the hens when they come off to feed. A hatching-house should back to the north if possible, and the hatching-boxes in the open must be similarly placed; there should also be a level, open space in front of them where the runs may stand, or where the hens are placed for feeding. Good, sound old turf is far and away the

best surface, and the necessary grit for the hens may be scattered over it from time to time as required. When runs are used, the process of feeding and watering the hens is simple enough; but for the purpose of tethering them a stake must be driven in for each hen. To secure the necessary margin of room the stakes must be in two or more rows, fixed alternately 2yds. apart. The tethers for the hens should consist of a ring round the stake, to which a leather thong is attached. This thong should be about $\frac{1}{4}$ in. to $\frac{1}{3}$ in. wide, with a slit cut at the extremity through which the thong is served, thus forming a loop to go round the hen's leg. It is advisable to initiate the broody hens a day or two beforehand into this process of being tethered, but they speedily accommodate themselves to it, and when taken to the stakes offer little trouble. They should be taken off in the morning, as soon as is reasonably possible, and be kept off for about a quarter of an hour, during which they are fed—on soaked grain—and given water. Dust-baths may be provided if necessary.

The question of damping pheasants' eggs is a vexed one, but a medium course can be adopted with the greatest advantage. According to the state of the weather so the course to be pursued must be mapped out daily. In very dry weather water round the edges of each nest with a very fine spray, and with the water at 100deg. In fairly dry weather, water freely when the hens are put off and a few minutes before they return to the nest, and if the weather be muggy and damp, or the dew heavy and clinging, do not water at all.

From the seventh to the eleventh or twelfth day the eggs may be tested for unfertile ones, which must be replaced from the reserve eggs, either under hens or in the incubator. The testing to be effective must be thorough and carefully done. Rule of thumb in this matter is quite

useless, and it would serve just as good a purpose to leave the eggs untested. A skilled person can tell them against the sun, if it be bright, by holding them towards its light with one hand and screening it with the other ; but a better plan is to have a piece of stout cardboard (Fig. 5), about 1ft. square, provided with a hole the shape of, and slightly smaller than, a pheasant's egg. Convey each clutch in turn to where it is sufficiently dark and convenient for the purpose, and by means of a bright lamp scrutinise each

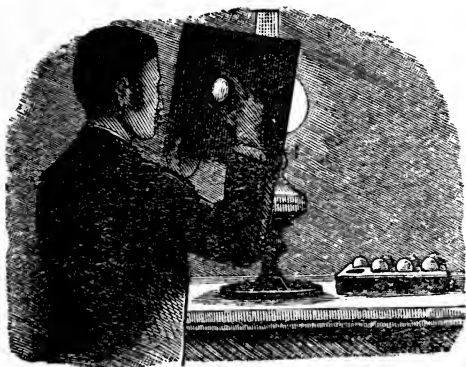


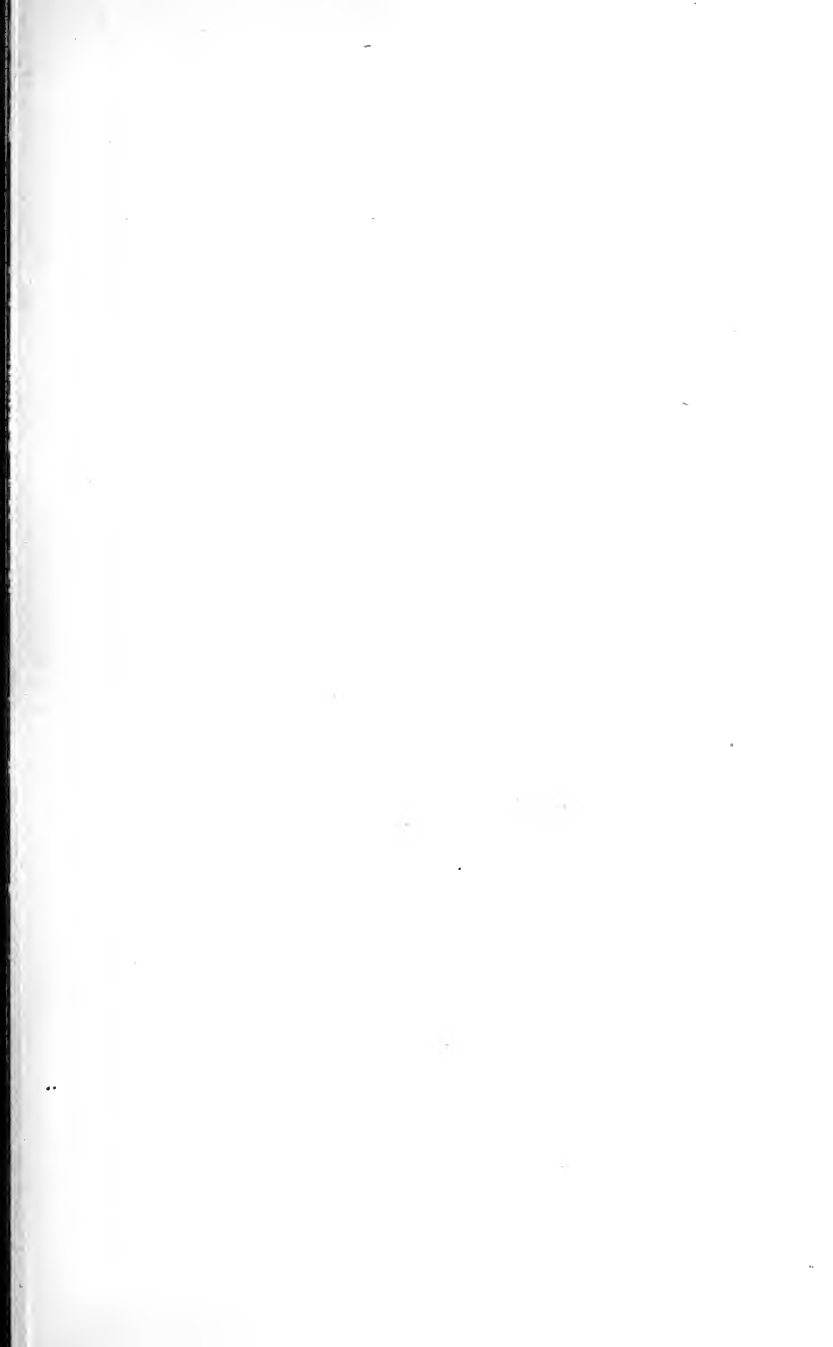
Fig. 5.—Mode of Testing Pheasants' Eggs.

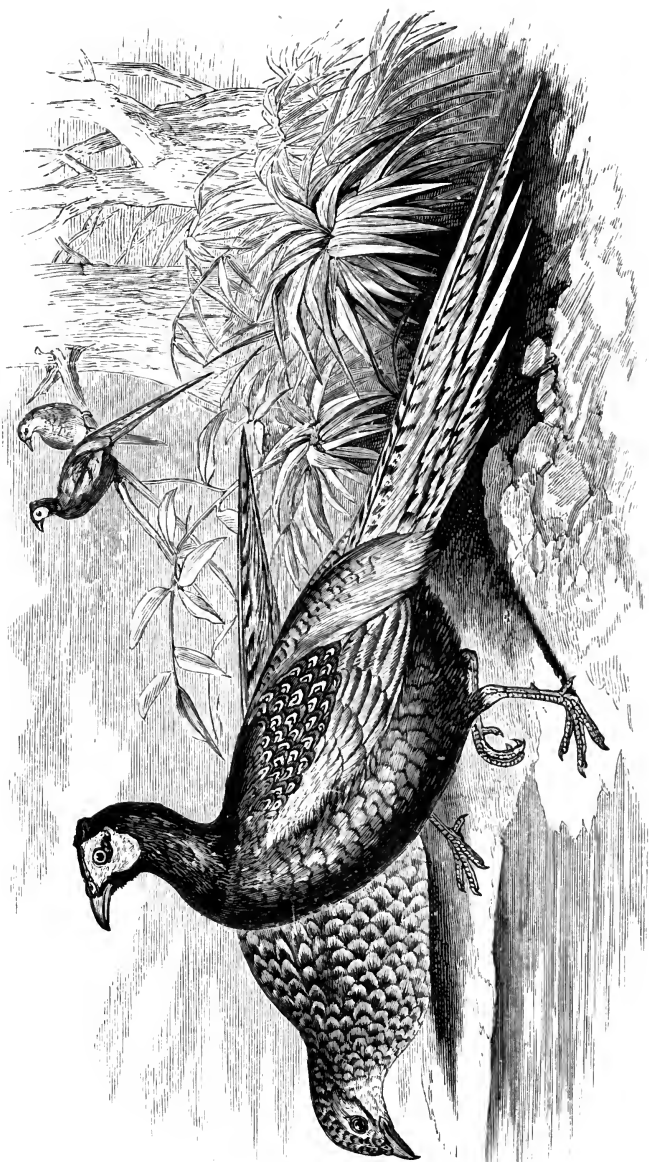
egg in turn as it is placed against the hole in the cardboard, and so as to receive the full light of the lamp. The fertile eggs will be perfectly opaque, except the small air-chamber at the larger end. All others are unfertile, and must be removed and replaced. Where many eggs have to be tested, a small apparatus embracing these details may be constructed, a neat wire holder being affixed to the cardboard to keep the egg in position whilst being examined. A use may sometimes be found for the unfertile eggs if they have not become seriously tainted.

It is necessary to point out that where the hens are set in boxes placed in the open some protection must be afforded to the hatching-boxes and to the hens in them at times of severe weather. Thus, heavy rain or very cold winds or frost are calculated to lower unduly the temperature of the sitting hen, and, maybe, also affect the eggs. Some form of covering should be thrown or placed over each box under such circumstances, so as to protect them from the wet or cold, but not to interfere with the ventilation of the nest-boxes.

Incubation should be completed upon the twenty-fourth day, but it is impossible to lay down a hard-and-fast rule as to the day or even the hour when the eggs should commence to hatch out. Sufficient that they may be expected to do so upon the completion of full twenty-four days' incubation. At the end of this time examination of each nest may be made, and if the eggs have already commenced to hatch out, just such observation without interference may be exercised as seems advisable. Speaking roundly, the less interference the better until a further twenty-four hours has elapsed after the first chick is born. You may here and there save one from being crushed, but you will probably contribute to three losing their lives for every one succoured.

Some difference may be made in regard to the treatment of the broods in boxes provided with a run; but even in this respect a certain discretion should be exercised. However, no harm can be done by placing a little food within the run, so that any chicks which may—as some of them do—find their way from the hatching-box to the run shall have something to occupy them.





JAPANESE PHEASANT
(PHASIANUS VERSICOLOR)

A beautiful species, with dark green breast, introduced into this country by the Earl of Derby in 1840.

CHAPTER VI.

PHEASANTS: Hand-rearing.—Coops and Runs.—The Rearing-Field.—Transfer of the Poults to Covert.—Disposal in the Coverts.

THE care and rearing of the young chicks must now command attention. I shall not, however, treat of the question of their food and feeding at the present stage, but devote an entirely separate chapter to these matters.

The best type of coop to employ for rearing young pheasants is a subject upon which game-rearers generally appear to have agreed to differ. Every style and type, from extensively provided coops and runs to the simplest forms (Fig. 6), have been advocated for adoption as alone contributing to success. The matter, however, lies upon a simple basis, which has the nature and the position of the ground as the chief points to influence it; whilst the amount of labour available, and the possible attacks from vermin—furred and feathered—may be regarded as secondary points bearing upon the subject. Wherever it be possible, the simpler, in reason, the form of coop adopted the better, but it is necessary that a certain adequate quantity of suitable runs should be provided (Fig. 7). Under normal circumstances, when it is possible continuously to watch the coops by night and by day, the simpler form of coop proves abundantly serviceable. The actual type does not, however, matter very much, provided it

embodies those features which are essential in every really serviceable article of the kind. These essentials are as follow : The size of the coops should not be less than 24in.

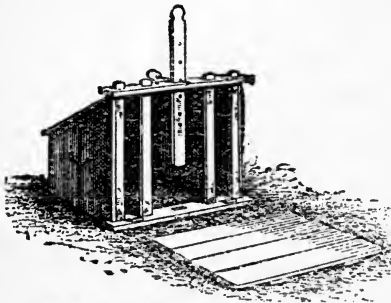


Fig. 6.—The Payne-Gallwey Coop.
A cheap and simple style of coop.

wide by 20in. deep, and 24in. high in front by 12in. to 14in. high at back. The bottoms must be covered with vermin-proof wire-netting, and each coop must be provided with a serviceable shutter, and with a false roof, if possible, which will slide out from under the roof proper, and

afford shelter from sun and rain to the young chicks. These two latter necessary features can be merged in one if the shutter be hinged at the top, with means to suspend it as a shelter when required (Fig. 8). The coops must be well ventilated without being draughty, they must be strongly made, but light and well balanced for handling, and be provided with the necessary means for holding when they are lifted. A sliding-bar must also be provided to let the foster-hen out when required.

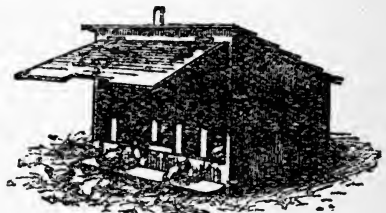


Fig. 7.—Rearing-Coop for Pheasants.
The shutter is hinged, and serves also as shelter from sun and rain.

Holding, as I do, that the healthiest pheasants are reared from chicks which roost on an earthen floor, I stipulate for a wire netting bottom to the coops ; but

inasmuch as these will have to be moved whilst containing the broods, other means than the wire netting must be found for retaining them. To this end a number of movable wooden bottoms in loose sections, or hinged by means of felt, must also be on hand, so that they can be fitted into the coops at the time of removal. In cases, however, where more than one person is occupied in the moving of the coops, some squares of roofing-felt may be utilised, which, by being slid under the coops, effect the purpose desired, and afford at the same time a support by means of which the removal may be accomplished.

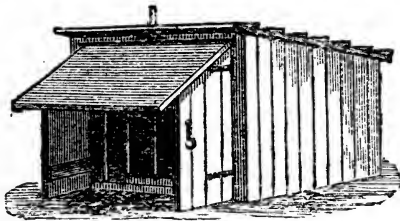


Fig. 8.—Rearing-Coop with Sliding Double Roof.

The sliding roof with folding shutters forms shelter from sun and rain.

It may be mentioned here that very considerable advantage may be obtained by the more general use of roofing-felt in connection with pheasant-coops, and under certain circumstances of not exceptional occurrence it proves most useful. In cases of continual wet weather, whether the coops are standing in their old places or whether just removed to new ground, if pieces of this felt be provided for each coop, and placed beneath it, the chicks will remain dry, and the dampness arising from a moisture-sodden soil will be prevented. It is cheap material, and in wet seasons should always be available for employment in the direction named.

As regards the question of runs for the coops, a great deal depends upon circumstances; but in any case a certain number of runs suited to the coops should be provided. The number of them should be the same as that of the batches of broods brought off at the same time.

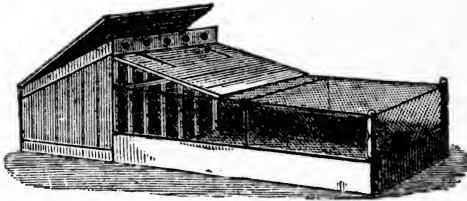


Fig. 9.—Rearing-Coop and Run.

Probably the best type of run is that made of straight galvanised wire-work, with a hinged top, about 3ft. long, and in width and height accommodating to the size of the coops, *i.e.*, 24in. by 24in. (Figs. 9 and 10).

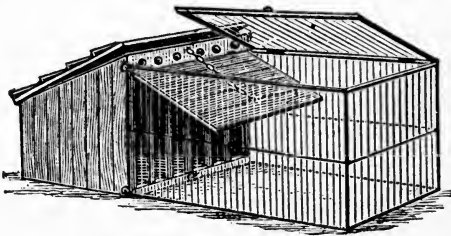


Fig. 10.—Rearing-Coop with Cage-Run.

The conditions which render the employment of runs indispensable are those which do not provide for the continual watching of the broods in the rearing-field. These conditions usually arise in the case of small preserves, or where only a small number of birds are reared. Under

such circumstances, or when it is impossible to cope with the attacks of vermin, runs must certainly be provided for the protection of the chicks. It must always be borne in mind that the runs to prove effective must be vermin-proof, they must fasten securely to the coops, and, if need be, must be fixed to the ground so that poaching cats or dogs cannot push them on one side.

It will be observed in connection with this subject of coops and runs that beyond treating of the general and particular principles which must govern their construction and form I have given a few illustrations of different types, but have not recommended any particular coop or run as being of general utility. The reason why I have adopted this plan is that there are so many reputable firms catering for this class of appliance that a mere perusal of their catalogues will enable the preserver to select the type most suited to his requirement and his means. If an attempt were here made to illustrate all types, the result would tend only to confuse instead of to simplify the matter.

We must now transfer our attention to the subject of the rearing-field or fields. Upon the exercise of proper discrimination in the choice and management of the rearing-field or fields depend the healthiness and stamina of the birds produced. It will depend also upon the nature and the constitution of the preserve how the rearing-fields must be organised. In any case it is far better to err upon the side of too much ground being apportioned to the purpose than too little. Indeed, it is to the failure to recognise this fact that want of success in rearing healthy birds, or a proper proportion of poults from the chicks hatched, is directly due. In the case of a single self-contained preserve it will be possible to do very well with but one rearing-field; but where the preserve is composed of a

number of separate beats, then it is very necessary that separate rearing-fields should be provided for each beat.

The ground chosen for the purpose should be, if possible, a thoroughly sound and fruitful pasture, quick-growing, but not rank, in which grasses of free seed-bearing character predominate, together with good clovers. Any sound, well-drained soil, except a clayey one, will serve, and the ground should face, not necessarily slope severely towards, the south-south-west or even towards the west. It is an advantage, a very great one, if it be well sheltered from the north, but it should be open to receive the early morning sunshine, without being unduly exposed to the east. Good, sound, clean-cut, well-kept hedges should surround it, and there is no objection to—on the contrary, there is an advantage in—one of the coverts forming a portion of the boundary of the field, provided always that the covert in question does not shelter vermin or offer them a point of vantage from which to make inroads upon the ranks of the young pheasant chicks. The field or fields, moreover, should be of such conformation as to render it possible to watch every square yard of them from one point of observation. If a single field of sufficient dimensions cannot be secured, then two or more adjoining ones may be brought into requisition.

Provided the ground chosen be thoroughly sound and productive, it may be employed for the same purpose in consecutive seasons, but in any case it should be mown all over after the birds have been removed, be then harrowed, and at the proper time be dressed with a thin covering of earth and lime, mixed, in the proportion of three to one. It must be chain-harrowed again in the spring, and twice rolled in cross-wise directions. There should be if possible no ditches alongside the hedgerows; but if such exist, either wire netting must be run along the

field side of them, or else they may be made to slope gently if they happen to be dry. If provision of this kind be not made, many young birds will be lost.

Of course, once ground has been used for the purposes of a rearing-field, it is far more advantageous that it should not be employed again for this purpose, if there has been the slightest sign of disease other than that normal to pheasant chickenhood, until at least three years have elapsed. If it were possible, this should be made the rule in all cases.

As before stated, practically any soil, if well drained, dry, and healthy, may be considered if not suitable, anyhow adaptable to the purposes of the rearing-fields; but if it be possible specially to prepare such, and suit it to the exact requirements of the purpose, then a well-broken and rolled fallow, or a field or two, according to size, of specially-sown seeds, in which the long and rye-grasses and suitable clovers predominate, grown upon a sandy loam or other poor soil of similar character, but in no case a peaty one, should be provided.

I may here mention in passing that rich loams under old pasture are those most likely to favour the production of gapes; they also act similarly as regards enteritis when heavy dews prevail, and are provocative of one of the forms of cramp during a cold spring. Clay soils are worse in every one of these respects, and are equally likely to produce the other and worse form of cramp. With these facts before him, the preserver has every reason for exercising the greatest prudence in the choice of the sites for his rearing-ground.

The minimum satisfactory allowance of ground to each brood is five square rods, but it is greatly to be desired that nearer eight square rods should be allotted. This latter allowance would permit of twenty broods to the acre,

which is quite close enough quarters, and one which may very well be exceeded if the conditions permit. In fact, upon preserves where the circumstances obtaining do not allow of the broods being removed, or, anyhow, a portion of them, at an early age, it will be necessary to provide more ground per brood than is here specified. Upon some preserves it is the practice, and a very good one too, where possible, to remove the more forward broods from the rearing-field proper in batches, and at regular stages, towards the coverts they are intended to occupy. This system is, however, only feasible when the preserve is of park-like nature, and it is possible to maintain constant watch over them and be assured of their freedom from interference by farm beasts or vermin of whatever description. I do not mention this as an alternative system, but a practice that may be resorted to when the rearing-ground accommodation is perforce limited.

When the time comes for the rearing-ground to be prepared for the reception of the young chicks, it will be necessary to mow such portions of it as shall be destined for the coops and as running-ground for the young birds. The exact manner in which it is best to regulate this must depend upon the configuration of the ground ; but inasmuch as each rearing-field will, if combining the desiderata referred to above, possess a general slope towards the south, so spaces should be cut across it from—roughly speaking—east to west of a width of from 12ft. to 15ft. or more. At intervals of twice this distance, cuts about 6ft. to 9ft. in width should be made at right angles to the other paths. The resulting grass must be removed from the ground.

The coops and runs—where the latter are employed—will then be set out upon the mown spaces at regular distances, ready for the reception of the newly-hatched

chicks. The coops should be in position a day or two before they will be occupied, as this gives time for any excess of surface moisture to work off before the young chicks tenant them. As mentioned at the end of the last chapter, removal of the broods from the nesting-boxes should take place twenty-four hours after the hatching commences, as at this early period it is rather warmth than food which is required for them. For the purposes of removal proper carrying-boxes (Fig. 11) must be provided for the young chicks, so that they may not be chilled in the

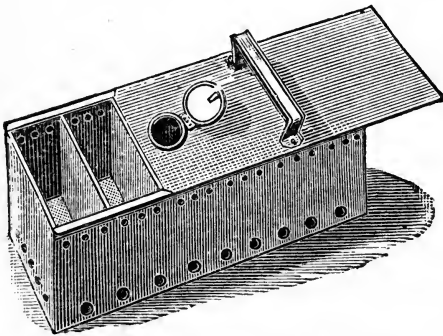


Fig. II.—Carrying-Box for Pheasant Chicks.

process. The broods being removed in batches of five or six at a time, if there be any distance to be covered it is advantageous to provide a suitable crate to take that number of foster-hens, and carrying-boxes to contain the corresponding number of broods. The latter should be provided with a sliding lid, and some soft felt be placed in the carrying-boxes, in which the compartments should measure 12in. long by 4in. wide by 9in. high, to accommodate clutches of fifteen chicks. Care must be taken that no mistake is made in delivering the proper broods to the

respective foster-hens. It is necessary to exercise discretion in regard to both the time of day when the removal of the broods takes place, and also the opening of the coops after they are placed in them. If the weather be generally favourable, they may be opened an hour or so after the broods are disposed in the coops, it being always advisable to allow the hen to mother the chicks a little before the latter receive liberty to leave the coop. It is at this time that I recommend the general use of runs for the broods for the first day or two, and it will be obvious to anyone that the keeper employing them stands at a distinct advantage over those who do not.

As food and feeding will be dealt with fully in the following chapter, there is no necessity to touch upon that matter now, and we can follow, therefore, the course of existence of the chicks until such time as they are transferred to the coverts. Unless any of the broods be removed for the reasons already mentioned, the young pheasants will continue to occupy the coops until they begin to develop their second tails and become too large to enter them freely, which will be when they are about two months old. It then becomes necessary to effect their transference to the coverts, where they will remain permanently. This may be accomplished in one moving or in several; but the birds must be brought to suitable sites along the covert-side or in the rides at such time as will ensure their first attempts at roosting outside the coops being made upon the handy trees or high, strong bushes adjoining the coops. When choosing the positions for these it is advisable to select sites as open as possible—that is, where there is little or no thick ground-growth—otherwise the young poults are more likely to roost amongst this at first than in the trees. In any case, they will not go far from the coops,

but it is desirable to get them up on the trees as soon as possible, because it is precisely at this period that they are exposed to the attacks of ground-vermin.

Wherever there are good broad rides in the coverts, the proper respective quantity of broods must be disposed along them, at such suitable points as will ensure practically the same surroundings as fall to the lot of those outside the covert. There is sure to be very considerable waste of the young poults if the coops be placed adjacent to low, thick cover. Many will wander and lose themselves, and probably fall victims to any chance vermin. It is therefore necessary to select the positions for the coops along the rides, where not only do the latter offer them a free run, but where the nature of the woodland behind the coops is free and open as well. I know that regular rows of coops, at nearly equal distances, carry a smart and pleasing appearance with them; but if the welfare of the birds is to be sacrificed for that, there is nothing gained in the process.

It will only be necessary to retain the coops with the foster-hens just as long as any members of the individual broods continue to enter the coops at night. As soon as all are roosting outside, these may be taken away, and the young poults left to shift for themselves. Of course, they will require careful watching, considerate feeding, and so on, until they "feather up" and commence to reach maturity.

Before passing to other matters it is necessary here to discuss the subject of the disposal of the hand-reared birds amongst the various coverts upon the preserve. As is well known, or, at any rate, ought to be, although hand-reared birds are in a way tame enough in the early stages of maturity, or approaching maturity, they become later in the year most restless, far more so than the wild-bred

birds, and at times it is almost impossible to prevent them from straying. This is notably the case in open seasons when natural food is plentiful. Bearing this fact in view it follows that the bulk of the hand-reared birds should be disposed in and around the coverts lying away from the boundaries of the preserve. It is a too frequently adopted practice almost entirely to denude the outlying coverts of eggs and nests during the laying season ; consequently it is almost certain that if hand-reared birds be put down in these border coverts a large proportion are bound to stray, as they will find few wild birds there to associate with and restrain their wandering propensities. When this is the condition of things prevailing, it is better rather to over than to under-stock the centrally-situated coverts, and leave the outlying ones comparatively sparsely provided. It is necessary to differentiate between the actual home coverts upon a large preserve and the main in-lying ones, because inasmuch as the former will in all probability not be shot until quite late in the season, they do not enter into the main subject of these remarks.

Some coverts, irrespective of acreage, will carry many more birds comparatively than others, and it will be necessary to ascertain by close observation to what extent birds can be put down. It is scarcely possible to place in writing what indications may be taken as a guide in this direction ; but, as a general rule, the prevalence or scarcity of wild-birds' nests in the respective coverts may be taken as a sign of their capacity to hold birds. Of course, it can only be ascertained by actual experience, more or less of an experimental character, extending over two or three seasons, how many birds the coverts in particular, and the ground in general, will carry. It is possible to give actual figures of what has been and can be done, but I am afraid that any facts which I might offer in this

respect would be more likely to prove misleading than instructive.

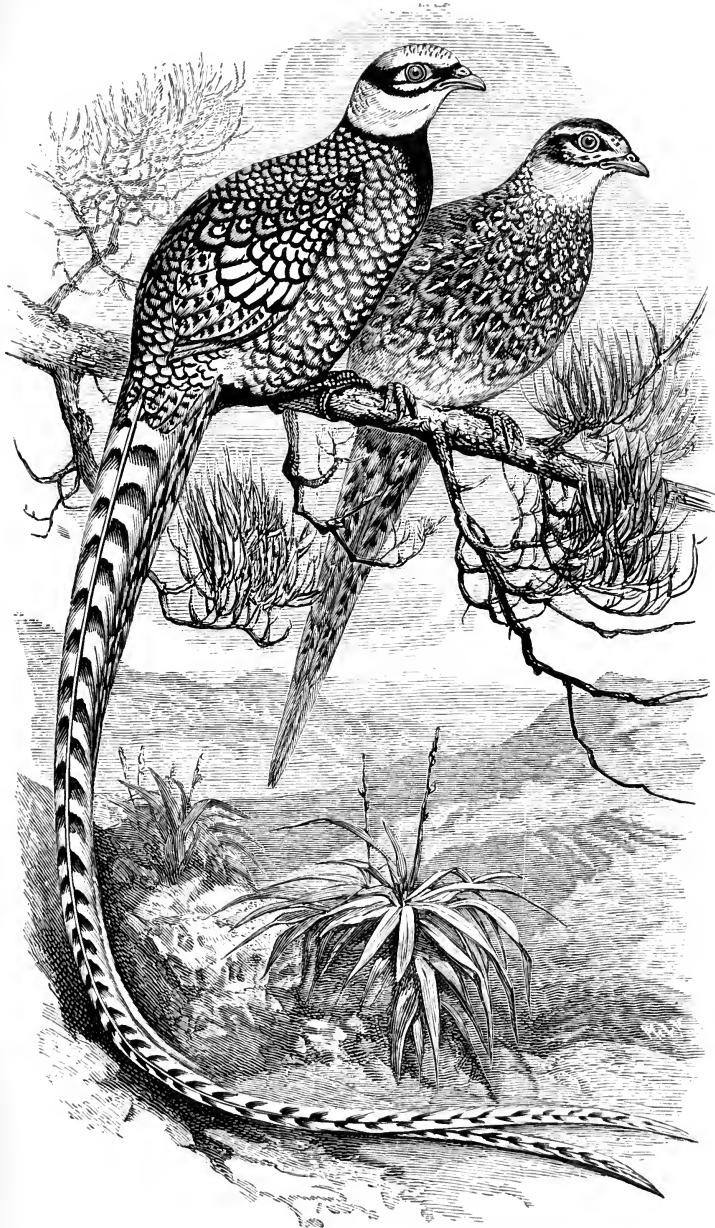
To a large extent the same remarks which apply to the separate coverts upon a preserve or a beat are relevant to the separate beats which may go to make up one large preserve. Given two or three, it is almost certain that some of the beats will be of their own nature less productive, or of less carrying power, than others. Their possibilities in these directions can only be definitely ascertained by actual experience, but may be fairly gauged at the outset by evidences available to even the moderately experienced. It is usual, however, for so many eggs to be allotted to each beat, and the under-keeper in charge is entrusted with the hatching and rearing of the resulting birds, just as if it were a separate preserve. Acreage of the beat and the coverts cannot, however, alone be taken as a guide of what can be done or ought to be done. A good deal of bickering occurs, and blame is apportioned over apparent discrepancies in the results secured upon different, but apparently identical, beats; but it is certain that if the possibilities of them were properly ascertained, it would be found that their capabilities were not of the same calibre. It is necessary that these facts in connection with rearing should be brought home to the preserver, otherwise disappointment and possibly injustice might follow.

CHAPTER VII.

PHEASANTS: Food.—Feeding and General Management.

THE nature of the food to be given, and the manner of feeding pheasants from the time they break the shell until they are ready for shot, is one of the most complex matters in the whole system of game-preserving. It has been one which has vexed the minds of keepers, preservers, and experts ever since hand-rearing became a general practice, and is one which is likely to remain a matter for conflicting opinion for a long time to come. Numberless systems of feeding have been worked out and put into practice with varying success. It would, however, be a profitless task to attempt to discuss them in anything approaching detail, and it must suffice for our purpose to work out one main system of feeding and treatment, it being conceded that local circumstances may warrant its modification in some respects.

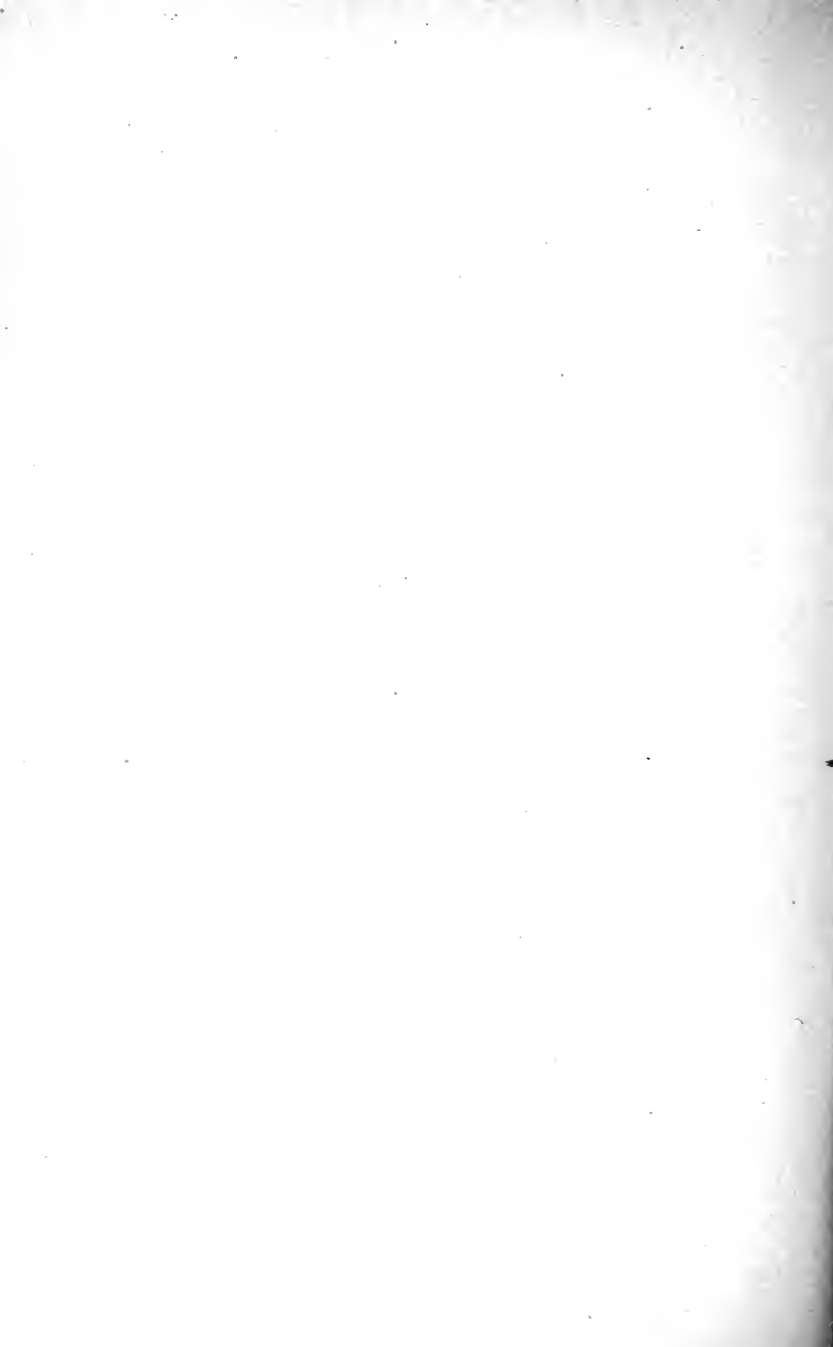
In connection with the feeding of pheasants it must always be remembered that the soil upon which they are reared, and the conditions of their natural environment, are bound to exert a very pronounced influence for good or for evil upon the health and stamina of the stock. Without a due appreciation of how these influences react upon the birds from the shell onwards it is impossible for the preserver to obtain adequate ultimate results from his hatching operations.



REEVES' PHEASANT

(PHASIANUS REEVESII)

A very hardy Chinese species, capital flyer, and the



It is impossible to address one's self to the important subject of pheasant-feeding without reference to the many forms of foods placed at the disposal of preservers by a large number of thoroughly reputable firms, whose manufactures are the result of long and carefully worked-out experiment, and have proved their worth under widespread practical employment. Where so many possess great merit, it would be invidious to select any one for recommendation; but if, in working out a proper system of pheasant-feeding, I happen to ignore them, it is not because I am not appreciative of their merits under certain conditions.

In dealing with pheasant-foods we must divide them into those applicable to the several stages of pheasant-life, comprising early and later chickenhood, the poult stage, and semi-mature and mature birds. These I determine as (1) up to a week or ten days; (2) from a week to three or four weeks old; (3) from one month to two months inclusive; (4) from two months to six months.

We will consider each of these periods in turn. The first food given to young pheasant chicks should consist of a form of custard made in the manner I shall describe. Experience of my own and others confirms the opinion that hard-boiled egg is not really a suitable food, and unless carefully handled and fed to the birds, is likely to prove actually deleterious. It is much to be desired that its use become less extensive, and be replaced by custard made as follows: Beat up thoroughly as many fresh eggs as are required. Place a corresponding quantity of new milk in an enamelled saucepan, and bring it to boiling-point, when the beaten-up eggs are poured in, and the whole is slowly stirred till it thickens into a firm form of custard; it should then be turned into a thoroughly clean glazed ware bowl. The respective quantities are a dozen

eggs to each pint of milk, which provides sufficient food for two clutches for one day. The custard must be made afresh each morning, and be kept in a cool place. When feeding it to the chicks, rub in a table-spoonful of very finely-ground oatmeal with each quantity of custard.

This should constitute the sole food of the young chicks for the first two days, then gradually increase the amount of oatmeal day by day till the end of the first complete week. Feed the chicks six times a day during this period, giving the first meal an hour after sunrise—not daylight—the second and following at regular intervals, and the last an hour before sundown. If runs be employed, as they should be, give the first and last meal within them, if the chicks be given liberty during a portion of the day. The food should be given on clean sheets of plate glass, on slates or slabs of stoneware. I have a preference, however, for very shallow troughs, with just sufficient side to prevent the chicks from scattering the food over the margin. Endeavour at this period to prevent by all possible means the chicks from having access to dew, and shelter the runs and the fronts of the coops so that the birds may not be needlessly exposed to rain or to bursts of brilliant sunshine. At the end of the week discard the runs, and employ them for following broods. Water drawn from deep wells or from springs where they issue from the ground and are uncontaminated should be given in absolutely clean glazed ware. If there is an even remote possibility of taint about the ground, plunge every drinking-vessel in boiling water each morning before putting it down to the chicks, which should be done when they have picked up their food. Employ a properly-cleaned can for bringing the water to the coops, and treat it similarly to the drinking-vessels if necessary. As soon as the chicks have been fed and watered, empty the drinking-vessels and remove them.

The foster-hens should be fed and watered at the same time as the chicks receive their first and last meal of the day.

In laying emphasis upon the absolute necessity of extreme cleanliness and foresight at this very early period of pheasant life, I do so with the conviction that it is at this time that the seeds of disease—enteritis, cramps, and gapes—are most likely to be sown in the bodies of the young pheasants. Do not commence to exercise this care and attention only when the stock is “making nice young birds,” for it is then often too late to prevent the malady. Upon having the birds strong and healthy from the very start and keeping them so depends the success of the whole season’s work.

Every rearing-field should have its hospital, away from the field and away from any hatching-nests. For the purpose select one or more foster-hens, and give them a few chicks to look after. Hens which have hatched out reserve broods will do for this purpose. Then whenever a sick or an ailing chick is seen, take it away at once from its own brood and transfer it to the hospital for separate observation and treatment. Better to lose a dozen or two this way than to run the risk of contaminating a whole field. If any of the chicks in the rearing-field die, take them right away and burn them, unless it is desired to open them and investigate. If the rearer knows enough of the internal economy of pheasant chicks to make this investigation, he should do it away from everything, at the same time taking care to disinfect himself before returning to his charges. If they are to be sent away to competent authorities for investigation, adopt the same precautions, because the rearer may carry the infection from coop to coop and field to field just as easily as if a lot of infected birds were set running riot amongst the healthy ones.

What I have said here must be regarded as instructions necessary of observance throughout the whole course of the rearing period. If the preventive means be relaxed or neglected at any period, then blame for the outbreak of disease and loss of chicks is entirely due to the faults of the preserver or his keeper.

We will now pass to the second stage of pheasant chickenhood as before determined. Throughout this period the custard must remain the basis of the food given, but the feeding times may be reduced to four per diem and gradually lessened to only three. Instead of the plain oatmeal hitherto mixed with the custard, one or other of the specially prepared meals supplied by the manufacturers must be substituted for it up to the end of the first fortnight of the chicks' existence. If, however, the preserver should prefer to make up his own meal instead of purchasing it, here is a suitable formula to work to :

(1) Medium oatmeal	24	parts.
Finely ground rice	16	„
Maize meal	16	„
Bruised hempseed	3	„
Linseed meal	1	„
Prepared desiccated meat.....	4	„
	<u>64</u>	parts.*

This and other meals must be made up with boiling water stirred in with them. There is, however, a right and a wrong way of doing this, and to be effective the boiling water must be gradually poured over the meal so that all of it is in turn submitted to the effect of the

* The formulæ for pheasant foods are made up on the basis of two bushels, so that one part represents one quart.

water. When thoroughly incorporated, the meal should be in a fairly dry, crumbly state, and the addition of the custard will complete the food. Two parts of custard should be added to each part of meal. If the mixture clogs at all it should be rubbed through a sieve suitable for the purpose. As soon as the chicks are large enough to feed from feeding-troughs or pans these should be provided. They must be of enamelled or glazed ware, and should be removed, together with any surplus food, after each meal. Food left either in pans or upon the ground soon becomes sour and unfit for the birds' consumption.

As soon as the chicks have completed a fortnight's growth they may be put on to grain feed. At first this should be given only at the midday meal, then at this and the evening meal, and finally at all, when the custard may be discontinued, which will be about the time when they are one month old. By grain feed is not meant a simple diet of whole grain; on the contrary, the grain feed of young pheasants must be of the varied character and form, as far as possible, that they would discover for themselves in a natural state, and may be compounded on the following lines:—

(2) Coarse oatmeal	16	parts.
Broken wheat	16	„
Millet seed or dari	8	„
Canary seed	4	„
Hempseed	2	„
Linseed	2	„
Crushed blue peas	8	„
Crushed maize	8	„
	<hr/>	
	64	parts.
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At first this mixture should be given after being scalded as previously described, then give it dry at the midday and morning meals until by the time the chicks are two months old dry feed may be given at all three meals.

At this period provision must be made for the supply of such forms of meat food and green stuff as the chicks require. The desiccated meat will have to be replaced by a cheaper substitute, such as greaves. It is

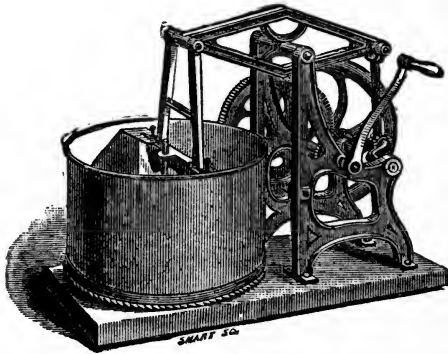


Fig. 12.—Meat-Chopping Machine.

necessary that the greaves supplied be of the best quality of mutton greaves chopped finely. An addition to this may be made of suet, also chopped finely, but the latter must not be given in any great quantity. Where rabbits are plentiful then flesh may be given with advantage, and is best prepared by being boiled until it comes away from the bone; remove the latter and chop the flesh up finely, incorporating it with the grain feed in the proportion of the flesh of two rabbits to each bushel of grain feed.

It must be here observed that it is far better to provide

a chopping or a mincing-machine (Fig 12) for preparing the meat. If it be chopped up on a board, unless this be of very hard wood indeed, small splinters are sure to work in with the meat, and these, if taken up by the birds, will cause inflammation of the bowels and death. The proportion of chopped greaves should be two quarts to each bushel of grain feed.

The amount and the nature of the green food to be given must be regulated by the growth upon the rearing-field, and should consist of lettuce for the most part, but green buckwheat grown for the purpose is an admirable addition or substitute. To ensure an abundant supply of the former the brown cos lettuce planted out in the late autumn is sure to provide abundant supply. The buckwheat, if cultivated for the purpose, will be in its best condition for the use intended when the supply of lettuce is running out. Both of these should be given in a finely cut form if possible, and in just such quantities as the birds will pick up. In addition, from time to time a small preparation of chopped onion may be provided for the birds, notably during cold or showery weather. Where garlic is grown, a few of the cloves of this vegetable may be chopped up also and given. It is at once beneficial and enticing to the birds; garlic seed, it may be mentioned, and the essential oil produced from it, being the "secret" factor in most of the draws advertised for the purpose of enticing birds over the boundary or keeping them from straying.

Before passing to the final stage of pheasant-feeding, I will give the particulars of two other mixtures of grain feed which may be given occasionally as being of a more stimulating character.

These mixtures, it is necessary to point out, must not be regarded as being in any way of the nature of spiced

foods. Their merit lies simply in the fact that they offer a change of diet.

(3) Broken wheat	12	parts.
Coarse oatmeal	12	„
Hempseed	4	„
Linseed	2	„
Crushed peas	4	„
Crushed maize	8	„
Crushed barley	12	„
Millet or dari	4	„
Buckwheat	6	„
	<hr/>	
	64	parts.
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(4) Broken wheat	20	parts.
Millet seed	8	„
Crushed peas	8	„
Crushed maize	8	„
Dari	4	„
Crushed rice	8	„
Locust bean meal	8	„
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	64	parts.
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In considering what should be the main system of feeding adopted for pheasant poults and the mature birds, the chief point is how much natural food the birds can pick up, and what will be the nature of it. Once birds have got a footing in the coverts and the ground surrounding them, they will commence to discover food for themselves and afterwards to seek it. Under a high system of preservation the woodlands, &c., will not provide one-tenth the quantity of food the birds require. There will be some which they will find very much to their taste, and

it will probably be in search of this when it gives out that they will evince that strong disposition to stray which is so marked a feature of hand-reared birds. The keeper must therefore feed his birds accordingly.

Great diversity of opinion also prevails as to what are the best grains for pheasant-feeding; but if it be remembered, as I have before pointed out, that upon the nature of the soil depends to a very large extent the nature of the birds reared and maintained upon it, it will be amply clear to everyone that a system of feeding found to be entirely effective and beneficial upon one preserve or upon one beat may not prove so upon another. Of late years there has been a great deal more maize used for pheasant-feeding than was previously the case; but I am far from agreeing with those who maintain that maize is the best all-round food for covert pheasants. In fact, I go further and hold it for true that it is very easy to err in too great use of, or too close adherence to, maize for the purpose. In the first place, the varieties of maize obtainable on our markets differ considerably in form and quality, and although the various sorts do not offer sufficient difference when given ground and scalded to young pheasants, discrimination is necessary in selecting the kinds to be given whole to mature birds. For this purpose the best sorts are those known as Odessa, Galatz or Foxanian, and River Plate maize. These are all round moderately small sorts, but not so small as Cinquantino maize coming from Odessa or the Danube, which, although the finest qualities there are, run so small in the grain that they unduly encourage and permit their consumption by small wild birds when fed to pheasants in covert. When choosing maize for pheasant-feeding, it is necessary to pay proper attention to the condition of the grain, as if it has been heated on the voyage it may not be fit to feed to

game. The presence of slight mould upon the pithy side of the grain is evidence of its having been heated.

Leaving home-grown grain on one side, a few further remarks may be made for the guidance of preservers purchasing foreign grain for game-feeding purposes. Thus many of the cheaper foreign wheats of harder character than home-grown are equally suitable for feeding in covert. Foreign feeding barley, notably those sorts which have been clipped, is equally good and cheaper; foreign oats, especially the cheap sorts, are for the most part unsuitable. Syrian dari is superior to other sorts, as is also Danubian millet. Canadian white peas are very suitable and of moderate price, the coarser linseed is the best for game-feeding, and the price of canary seed varies many shillings a quarter, according to the time of year when it is purchased. It is possible also to secure at a very moderate cost, from the firms dealing in grain offal, mixtures of the impurities which come out in the process of dressing some foreign wheats. These screenings afford a cheap and an excellent form of food for pheasants and partridges at all stages, and are especially suitable for feeding the progeny of wild nesting birds when natural food is scarce.

Another matter which it would be as well to refer to here is the supply of grit for the birds. It is of little use feeding them properly if the means for masticating the food be not provided. Ground heavily stocked with pheasants, even the coverts on some lands, will become depleted of surface grit, and the birds will resort to all sorts of substances to replace it, mostly deleterious to their well-being. In the rearing-fields, therefore, and later about the coops when birds are being transferred to covert, ample provision of a supply of grit should be made, whilst if there be any shortage of it in the

coverts, loads of suitable grit should be scattered along the rides and the outsides.

Speaking generally, a mixed diet or a varied diet is far more suited to either pheasant poults or the mature birds than one of one character. Thus in corn countries—*i.e.*, those where the preserves embrace large areas of arable ground—there may be a larger proportion of maize fed than upon purely pasture ground, where wheat, oats, and barley should predominate. Peas and beans should be fed to the birds during cold and wet weather. The practice of giving what may be called highly spiced food to pheasants as a stimulating factor has very little to recommend it, and is best avoided altogether. It certainly may have a transitory effect, but the reaction is correspondingly bad. At the same time, in periods of very hard weather or long spells of wet and cold, an admixture of a very small quantity of peppercorns and pimento may be given with the other food.

In feeding pheasants, either forward poults or the mature birds, in covert, the keeper has a difficult task before him, because unless the quantity of food placed for the birds is properly adjusted to the number to be fed, either there will be a large waste or else the birds will be insufficiently fed, and consequently deteriorate in quality from a shooting point of view. According to the number of birds in covert, the way in which each covert may be divided by rides or even by flushing-trigs, so the scheme of feeding must be determined. It should be the aim of the gamekeeper to adopt such system of feeding as shall not lead to bringing his birds in too great quantities to one or more centres. The tendency with pheasants is to start roaming about as soon as they have satisfied the first cravings of their hunger. It should be his aim, at the same time, to feed birds as little upon the outsides of the

coverts as possible. To this end it may be necessary, as it certainly is advisable, to divide the feeding among one or more hands, according to the form and extent of each piece of woodland. Accordingly, when feeding takes place the keepers should enter simultaneously at the different points, and using their calls, scatter the food upon both sides of the rides or along the trigs. To be able to judge correctly the amount of food required, it should be the practice to scatter it sparsely at the first passage through the cover, then, giving birds time to feed, pass back, and according to whether they have dispersed or not, so offer additional food or withhold it. Upon succeeding days more should be offered until the correct quantity required has been ascertained. By the presence of uneaten food the fact that more than sufficient has been given is made apparent; but consideration must be had for the fact that not all the birds will have come to feed, and as the season advances it will be found necessary up to such time as shooting occurs to increase the quantity offered them.

Provision will also have to be made for shy feeders, of which there are sure to be a fair percentage amongst the stock. While shooting has not commenced, or is still proceeding, it is not advisable to provide anything in the form of permanent food-supply within the coverts, such as food-shelters, or by placing corn in the straw, unless the weather should set in very hard, in which case advantage may be taken to stock the former and provide the latter. It is always an advantage to the shooting to defer anything of this kind till as late as possible, as it concentrates birds at certain points within the woods without reference to shooting needs.

The times for feeding should attune themselves all through the season to those which—granted that natural

food be abundant—would be followed by the wild birds ; in other words, as soon after daylight as is possible, and about an hour or hour and a half before sundown. In the latter respect, it is better to err on the score of earliness than lateness, and where any great range of woodland has to be gone over, the work must be so arranged as to ensure all birds having ample daylight for the purposes of their afternoon meal.

Of course, do what one may, it is impossible to prevent some loss of food by wood-pigeons and small birds, and within reason I am not disposed to recommend much notice being taken of the fact ; but where the matter becomes serious, steps must be taken to deal with the nuisance. I shall refer to this subject at a later stage.

The feeding of pheasants, in fact of all game, during severe weather in winter, and generally throughout the winter months, is a matter for the most part quite distinct from their ordinary feeding, and takes place mainly within the limits of the coverts. There may be, and in some cases actually are, large numbers of outlying birds which, preferring the brakes and spinneys, will scarcely ever require attention from the preserver in respect of extra food, and which for the most part may be left out of consideration. These birds, if pressed during unusually hard weather, will surely find their way into the coverts for both shelter and food. Consequently there is rarely necessity to make special provision for their requirements, except upon those preserves which contain a considerable quantity of small spinneys and patches of wood.

Several considerations must weigh with those responsible for the scheme of feeding adopted, more especially in relation to the particular period when the food is being provided. Once the shooting season is passed, the question of the influence upon the birds ceases to be of importance ;

but up till then it is necessary that the provision of winter food should not too materially affect the movements of the birds in covert. What must be avoided is the drawing of the birds all to one point, or portions of them to several points around which they will congregate, and possibly remain, to the detriment of the general shooting over the coverts. Bearing this possible disability in mind, there is no reason why the several modes of winter feeding of pheasants, presently to be described, should not be practised with advantage.

There are several systems upon which pheasants may be fed in covert beyond the ordinary means by the keepers; but whichever be adopted a considerable amount of time and trouble must be involved. Chance and casual manner of providing food serve but a poor purpose. As a rule, more food is wasted than is consumed by the game-birds for which it is intended, or else it only actually reaches a portion of the birds, the remainder benefiting by it in no degree. The main points to be taken into consideration are the quantity of birds to be fed, the distance of the coverts from the keepers' headquarters, and the extent of them, together with the question previously referred to—namely, when the shooting ends, whether before or at the expiry of the lawful season. On some preserves the shooting is so governed that it is confined to a few weeks, and then finishes for all practical purposes. In other cases it is spread over a longer term, and may extend in more or less desultory fashion right up to the last day of January.

Wherever large numbers of birds are congregated in coverts, whether for purposes of shooting in season or as stock to be held over for the nesting-time, the best means of dealing with them in hard weather lies in the provision of such numbers of food-huts as the requirements of the

case may determine. The less in reason the number of birds brought together at one common feeding-place the better. Consequently it is better to err on the side of too many feeding-huts than too few. The size of the covert, its distance from other coverts, and the number of birds, must be the guide in this respect.

The most suitable sites for the huts, so-called, will be where the covert is dry and warm, where the situation is well hidden by the tree growth from other birds passing over, and where the undergrowth is not too dense, so that the pheasants can easily find and come to it in the first



Fig. 13.—Food-Shelter for Pheasant-Coverts.

instance. The presence of rides and paths centring upon the place is a matter for guidance in the selection of a site; whilst generally speaking the selection of a central position, one to which birds may be considered likely to find their way intuitively, may be taken as indicating the most suitable situation.

The form of shelter-hut most adapted to these considerations is as follows, but the dimensions may be varied to meet requirements (Fig. 13):—Six posts of rough 4in. fir-poles should first be set up to form an oblong about 15ft. in length by 6ft. in width. They should stand firmly, and

about 4ft. to 5ft. out of the ground. Roughly-sawn rafter-planks, 4in. wide by 2in. thick, should be nailed to the top, and the actual rafters, 2in. square, be fixed across the rafter-planks. Both the rafters and the rafter-planks should project 6in. from the limit of the oblong formed by the uprights, and the whole roof should then be thatched with either heather, gorse, or broom, and finished off with straw or rush thatching. Along the sides nail two lengths of smaller poles, and serve one end in the same manner. These poles should be laced in and out with some form of branches—either spruce, withy, gorse, or broom, whichever is handiest. The thick ends should lodge upon the inner side of the rafter-planks, and the extreme ends extend to the ground, leaving sufficient spaces between for ingress and egress of the pheasants. The interlacing should be of such nature as practically to exclude rain from beating through into the hut. The end left open must be provided with a movable hurdle upon the same lines to close that also, but permitting entry when required.

Within the hut and along its centre a low framework must be set up, which is used as support for the unthrashed grain, which should form the chief portion of the food supplied. Instead of a framework, pointed stakes driven into the ground will serve the purpose; but the greater efficacy of the framework usually warrants the extra trouble it entails.

As a guide to the selection of the size most suited, it may be stated that a food-hut of the dimensions given offers ample provision for the feeding of from one hundred and fifty to two hundred pheasants during such inclemencies of weather as necessitate proper protection of the food set down.

These huts are not so much intended as shelters for the

birds as for the food provided ; but of course in stress of weather they offer a very accommodating shelter to the birds themselves, whilst when the weather is fine and dry the food may be provided as well about the covert as within the huts.

The food-huts, when employed in large coverts, may serve as centres for an organised scheme of winter feeding for pheasants, worked in connection with smaller food-shelters spread here and there throughout the coverts. These may be of several kinds ; but, being of a less permanent nature than the larger huts, less time and trouble need be expended upon them. As a rule, their size does not require to be more than sufficient to protect one or two sheaves of corn or beans in the haulm from the rain or snow. They may be constructed on similar lines to the huts previously described, or they may be formed of three fir-poles, the smaller ends fixed together and the larger extended in the manner of a tripod, with two or three pieces fixed crosswise to maintain the uprights in position. Long withies, with the leaves on, or spruce branches should be lashed on to them, extending downwards to within a pheasant's height of the ground. The legs of the triangle formed should extend to about 4ft. apart, thus leaving ample space for setting up one or two sheaves of unthrashed corn within the shelter.

Another kind of food-shelter for pheasants may be formed by setting up either one or more single hurdles in a line, or leaning them together in couples, at the same time forming a rough thatch of withies or spruce branches in the manner already suggested, to provide the necessary protection from rain or snow.

In connection with all food-huts or shelters which may be set up for the winter feeding of pheasants, there is one important point which must not be overlooked, and that

is that the ground chosen must certainly be dry, and that where the actual huts are formed the thing should be so organised that it forms also a cover and shelter for the birds in severe weather. When the thatch covering for the huts or shelters is well managed and well put on, practically no rain should be able to pass through it, and the surface of the ground beneath should become thoroughly dry and dusty.

It is a good plan when the huts or shelters are first erected to scatter some sound, dry chaff, with a fair proportion of grain amongst it, upon the ground beneath

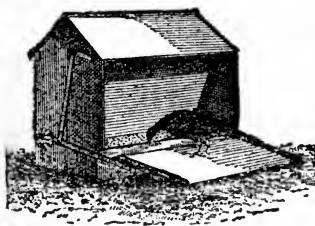


Fig. 14.—Pheasant Food-Hopper.

the shelters, more as a means of attraction than for any other specific purpose, and when it is at first sought to bring the birds to a knowledge of the whereabouts of and to feed at these food-shelters, it is not a bad plan to lay thin trails of grain for a hundred yards or so in different directions through the coverts, but centring upon the respective feeding-places. The trails should be taken through those parts of the covert only where wood-pigeons and other despoilers of the pheasants' food are not likely to discover them when flying over.

The practice of feeding pheasants in winter by simply strewing the corn or other food upon the ground at certain chosen spots is one very generally adopted, but none the less unsatisfactory. Food-hoppers, such as shown at Fig. 14, may also be employed. There occur, of course, numerous conditions under which this mode of feeding must necessarily be carried out, especially during the shooting

season, when it is very undesirable that the birds should be congregated at certain points in the coverts instead of being spread over the whole of them; but once shooting is at an end, then the practice of feeding indiscriminately upon the ground should be discontinued as far as possible. True, there is a certain merit in being able to "feed your birds all over the place"; but the arrangement does not work out well in other directions—the loss or waste of food is tremendous, and it is almost impossible to place any proper check upon the way in which the food is dealt with.

Endeavour should be made to feed with a view to the least loss of food possible, and with the further aim that what is used is as equally divided as possible amongst the birds to be fed. Whatever may be their actual needs, or however hard, in reason, hunger may press, there are sure to be a large number of very shy feeders amongst the birds, which will hang back to such a degree that they will miss their share. This is one point which will have to be considered when distributing the food, whilst the other is that it should not prove, by the mode of its offering, a bait to the birds to entice them from one cover to another—unless specially so directed—or cause them to concentrate upon that portion or those portions of the covert only where the food is set down for them. More or less open spaces, where the surface is even and dry, should be chosen. These may be either upon any paths or rides intersecting the coverts, or, as is frequently the case, there may be small clearings or expanses void of undergrowth which will serve the purpose.

It is customary with most keepers to employ a whistle to call their birds together for feeding, and, although the practice works well enough, it has its disadvantages when unduly extended. A far better plan is to let the food and

the feeding-time serve their own purpose in this respect, and once the birds have learnt—as they will do in a few days' time—when and where to look for the special provender, they will not fail to keep their meal-times. The efficacy of this mode of proceeding depends entirely upon its regularity. The use of the whistle is frequently an excuse for irregularity.







GOLDEN PHEASANT AND SILVER PHEASANT
(CHRYSOLOPHUS PICTUS) (EUPLOCAMUS NYCTHEMERUS)

The former has probably the most brilliant colouring of all the Pheasant species, and the latter is also a most beautiful bird.

CHAPTER VIII.

PHEASANTS : Water-Supply.

THE matter of water-supply for pheasants, whether the birds be hand-reared or birds in covert, is one which must always demand the close attention of the preserver. Of course, opinions differ widely upon the advisability of even giving young pheasants water at all, but it is more than probable that whatever may be the conditions prevailing in individual instances, a well-protected and carefully-arranged supply of water from deep well or spring is far more trustworthy than that obtainable by the chicks or poults from dew, drains, or small streamlets, and is vastly preferable. It must be remembered in this respect that it is the object of the preserver to prevent, as far as possible, his young birds from being exposed to heavy dews or rain, and that in providing them with the necessary drink from this source he is needlessly exposing them. There is further the fact that much of the disease to which young pheasants are liable is assisted by varying conditions of dew-fall, and that while it is in his power to control the purity of the water-supply he provides, he is not able to deal with that obtainable from such and other natural sources.

It is, therefore, infinitely to be preferred that the water-supply for young birds should be in the hands of the keepers, and be properly provided for. In the chapter on feeding I made passing reference to this subject, but it

is necessary here to elaborate the details somewhat. As mentioned, the supply of water should be drawn from deep wells, or from springs, where they issue from the ground, when the chances of contamination are very remote. Of course, when I say deep wells, those only are meant where the water-supply is pure and not stagnant, such wells usually having a constant rise in them, which finds an outlet at the level which the water attains. Fresh water should be taken every morning from these sources, and only such receptacles employed for its conveyance as can be submitted to correspondingly frequent purification. Anything in the form of a water-cart or a water-barrow is unsuited for the purpose, but barrels which can be thoroughly scoured will serve.

As regards the drinking-vessels provided, there is no objection to be offered to the use of one or other of the many forms of fountains manufactured for the use of poultry and pheasants, as far as penned mature birds are concerned, provided they are regularly cleaned and replenished. For the use of chicks and poults, however, there is nothing superior to pans of enamelled iron or glazed earthenware, which can be treated daily as previously recommended.

In connection with the rearing-field it is obviously of little avail to provide a supply of pure and uncontaminated water, if means be not also taken to prevent access by the chicks and poults to other water which is of contaminated character. Where anything of the kind exists, wire netting must be employed for the purpose indicated; but as, in all probability, any water of this kind which may be present in the rearing-fields will occupy the ditches from which it is necessary to protect the young birds, one service will provide for both contingencies.

The water-supply for birds in covert is a far more important matter than is generally supposed, and a great deal of the non-success in maintaining birds in some woodlands may be directly ascribed to the want or shortness of a sufficient supply of palatable water. It does not appear to occur to keepers and perservers that water-courses may run dry, springs give out, and ponds dry up. All of these accidents occur at times, not only in high summer, and the same effect may be produced by periods of dry frost. Next to provision of a proper food-supply comes that of a proper water-supply, and if the natural conditions of the ground under preservation be such as to restrict or actually not to offer the same, then adequate means must be taken to rectify the want.

The best and simplest means to adopt are to divert any possible water-courses, and run them through the coverts in artificial channels. This is not a difficult matter, once the system of taking the necessary levels is understood, and providing the ground is not of such nature as to allow the streams produced to lose themselves. Quite a small source of water can be utilised if the channels are formed so as to ensure a free run of water, which at intervals can be held back if necessary to provide larger and more easily accessible drinking-pools for the birds.

Where, however, there exist no means of diverting a stream of water through a covert, and it is otherwise devoid of a supply, then other methods must be adopted to provide it. As a rule, most waterless coverts lie upon a slope, and this being the case, it is usually possible to form one or even a series of surface cisterns, which, by the aid of small channels cut through the woodland, can be supplied with a sufficiency of rain-water, caught and led into them.

In order to provide an effective supply of pure water

the position of the cistern or cisterns will have to be towards the lower centre of the covert; but a good deal depends upon the natural trend of the ground, and the catch-channels should be directed accordingly. Where the ground to be served is of any great extent, a series of channels and cisterns can be formed, which will ensure a fair supply for the whole of it. Naturally, care is necessary in making the former so that they shall really carry the water to the latter and not lose it in their course.

The cisterns are best formed in the following manner, the size of them being, however, regulated by the possibilities of the flow of water—an oblong space of, say, roft. by 4ft. wide, and of such depth as shall ensure a level bottom to it when finished, and giving a depth of water of 3in. or 4in. When the space has been sufficiently hollowed out, the soil taken being banked up around the lower portion, beat down a foundation of heavy clay, shaping the basin to be formed, in the first instance, of this material, and allowing it to dry thoroughly. Upon this lay a coating rin. thick of concrete of equal parts cement and sand, finishing off with a $\frac{1}{2}$ in. facing of pure cement. At each of the upper corners form an inlet for the water coming from the channels, and on the lower a shallow outlet for any surplus which can be similarly conducted to other tanks or cisterns.

In cases where a water-supply can be led through the coverts, but where also this may prove of intermittent character, cisterns or tanks of this kind constructed to take any surplus, when there happens to be a free flow of water, serve very well as reservoirs when the water-course runs dry.

The maintenance of a water-supply during periods of frost cannot, of course, be guaranteed by any means of this description, and birds must be provided with such a

necessary at feeding-times in troughs or fountains, placed in the rides, or adjacent to any food-shelters, or in any similar way. The best means of preventing the water from freezing in troughs and fountains is by means of thick furze boughs, placed over them in such manner as still to permit access by the pheasants.

At times of long-continued wet and cold it is a salutary practice to place a little powdered sulphate of iron in the water, in the proportion of $\frac{1}{4}$ oz. of the sulphate to a gallon of water.



CHAPTER IX.

PHEASANTS : Diseases and Parasites.

THE majority of the diseases from which pheasants suffer limit their attacks, for the most part, to hand-reared birds, and to wild birds in the earlier stages of existence. The most fatal diseases are mainly epidemic in character, and result, more or less directly, from unfavourable conditions of weather. When reared in a natural manner from eggs laid by the wild birds, the pheasant is an extremely hardy bird, and very free from disease—more so, probably, than any other of our game-birds; but this hardiness is, to a large extent, due to the principle of the survival of the fittest of those hatched out in the natural broods, for unless they are well up to the standard of excellence of strength and constitution, they soon lose the necessary maternal care, are neglected, and die, or fall victims to vermin. Consequently, only the strong, healthy chicks are reared, resulting in hardy birds eventually. With coop-reared pheasants the case is altered. The weakly and sickly birds are usually helped on with the rest, and if there be a chance of any disease or ailment, these unfortunate youngsters are sure to prove the easiest victims, and spread the disease, if infectious, to their neighbours. Under normal conditions, the chief cause of pheasants' ailments is met either in the form of long-continued humid weather or a natural dampness of the ground. When,



CHINESE IMPEYAN PHEASANT

(LOPHOPHORUS L'HUYSI).

A blue-tailed species that is harder than the Monaul.

however, we come definitely to fixing the cause of most pheasant diseases as they exist to-day in more or less widespread activity, we have to look to other reasons. Unless these be brought into prominence, and be well understood by the preserver, some of the most fatal of them are sure to run riot through his stock and render his rearing operations abortive.

It must be recognised from the outset that the state of things set up by close preservation, which involves a far larger number of birds and animals seeking to exist upon a certain limited area of land than that area could possibly carry under purely natural conditions, creates an artificial situation which will permit of this undue increase. Sooner or later, unless the most stringent and far-reaching measures be taken, unseen and unfelt influences, which are always at work, will, as it were, arise to remedy or neutralise the artificial state set up, and restore the proper balance of Nature.

In order that anything of the kind may be avoided, or at least mitigated, it is necessary that the circumstances which are calculated to produce conditions favourable to the outbreak of disease should be known, so that they may be met and remedied at the very earliest possible moment. Of course, expert, almost semi-scientific, knowledge of this kind may or may not be possible with the gamekeeper or even the preserver, but to the extent possible to the individual it should be. Upon the other hand, I am not with those who would burden the gamekeeper with knowledge of a kind which it is not within his capacity to assimilate. To the ordinary individual of his class it should be sufficient if he be cognisant of the patent conditions likely to cause disease, and be sufficiently right-reasoning to seek to remove or to remedy them. More than this it would be unfair to expect.

There is, however, a pleasing absence of precise knowledge amongst the fraternity, which tends to lump one malady with another, or to connect totally different diseases and attribute them to identical causes. Then, again, the most familiar ones—which means those of which they possess most knowledge—are counted as the most fatal, and altogether the wonder is that as many birds are reared as there are, and that, it must be added, is a poor enough percentage in many instances.

I think it will serve the best purpose if we take the more familiar diseases first, and thus lead up to those of more deadly but less familiar character.

The affliction known to every rearer of pheasants as the gapes must claim first consideration. The symptoms are only too well known, but there is no harm in describing them. In the first instance there is a peculiar gaping of the mouth, giving one the idea that the bird is tired of doing so, which is probably the case. The neck is stretched forward, and there is a wheezy sound emitted, which soon develops into a cough. At times froth shows round the mouth, and also at the nostrils, evidently produced by the efforts to cough up the worms which cause gapes acting upon the saliva. As the worms gather in strength the efforts to produce them become more frequent and stronger, but by degrees the failure of energy in the afflicted bird, together with the inflammation in the throat, contribute to render the gaping and coughing impossible, and the bird is suffocated or dies from actual exhaustion.

Gapes is due to the presence in the windpipe, or, it may be, in the bronchial tubes, of a Nematode or Round-worm popularly known as the Red-worm and Forked-worm (*Syngamus trachealis*). Not only do the pests infest pheasants, fowls, and turkeys, but they are also found in several species of our commonest birds—rooks, wood-

pigeons, sparrows, starlings, and linnets to wit. A curious fact in connection with the life-history of this worm is that male and female are usually found *in cop.* inside birds affected with gapes. Indeed, it is this remarkable characteristic that has given rise to the popular name of Forked-worm; while that of Red-worm is due to the colour of the parasite. The female is very much larger than the male. When the former is mature, and full of eggs, she with her partner are expectorated by the affected birds. Eventually, after lying upon the ground, or maybe already in the bird's throat, the eggs are distributed, hatching out into embryo worms, which will develop into either sex of the mature worm. Inasmuch, too, as numbers of both embryos and eggs are taken by earth-worms, these, when swallowed by birds, act as intermediaries. Extremes of wet and cold are apparently avoided by the eggs or embryos remaining in the alimentary canals of the earth-worms during the autumn and winter. Wet weather is favourable to their development in the respect that earth-worms containing the eggs or embryos are frequently forced from the soil during its continuance, and thus spread the seeds of the disease.

From what has been stated, it will be obvious that directly gapes shows itself in a pheasant chick the proper course to pursue is to eliminate the brood it belongs to from the rearing-field, to lime the ground heavily where the coop stood and in its vicinity, and to transfer all adjacent broods to a distance. The one or two or more chicks should also be separated from the remainder.

There are many cures for gapes; but I doubt if any prove more effective than those in the form of fine dust which are blown into the coops or boxes provided for the purpose by means of special bellows (Fig. 15). The dust

enters in the form of a very fine dry mist, is breathed by the chicks, and stupefies the worms, which are easily coughed up. The simplest form of cure of this kind is ordinary lime reduced to a powder of the consistence of flour. When using anything of the kind, the coop or coops must be made sufficiently air-tight to render the application of the powder remedy effective; but it is better to be prepared with the handy apparatus, which many of the firms who cater for preservers supply at reasonable prices. When fumigating birds for gapes, it is well not to overdo it. Young chicks are better treated in two or three mode-

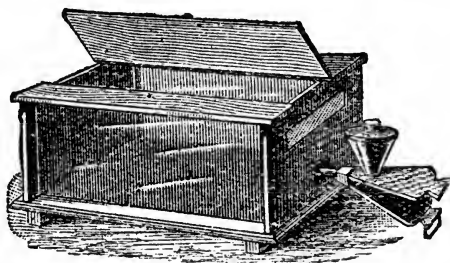


Fig. 15.—Dusting-Box and Bellows for Gapes.

rate applications, older ones and young poults in one or two more drastic dressings. The stronger the birds are, the less liable are they either to acquire or to succumb from this malady, and again, as they advance in age, so their freedom from infection decreases.

For reasons which the life-history of the Gape-worm makes sufficiently apparent, ground once infected by the pests should be rigorously treated, and avoided in the future. To render it again fit for the purposes of pheasant-rearing it must be thoroughly broken up, heavily limed, and not brought into use again for at least four years' time, even if then.

Under the elastic term "cramp," two, if not three, quite distinct diseases are usually denominated by numbers of gamekeepers, one disease being regarded as an advanced stage of the other, and the whole being lumped together as similarly caused, and remedies applied accordingly.

There is one form of cramp in pheasants of which very little is known, and is usually fatal, but not always so. It is mainly local, and at times more prevalent in the North of England than anywhere else ; but I have known it both in Essex and in the West of England. It is much akin in its symptoms to the main form of cramp—presently to be described—but a good many birds recover at times, though it leaves them crippled and weaklings. It appears to occur during long periods of cold north-east winds and dry weather, and attacks the early-hatched birds almost solely. There would appear to be no recognised cure for it, but I have known many birds recover when given a few grains of rice soaked in spirits of turpentine. It is only possible to get the birds to take one or two grains at a time by throwing them down casually, but they certainly improve upon the treatment. Fortunately or unfortunately, I had not very many cases to deal with, but the information is given for what it may prove to be worth.

True pheasant cramp is a clearly-defined disease, due to a bacillus emanating from a damp-ridden soil, or the moisture present in it, notably that covered with old pasture, and overshadowed by trees—oak, elm, or ash—indiscriminately. To prevent it, it is only necessary to avoid trying to rear birds upon ground thus characterised ; but, of course, all old pastures with overspreading trees do not contain the bacillus, and, consequently, may prove quite harmless until the particular one is found to provide the trouble. There is no cure for it, and the only way to

make sure of avoiding it is to have the rearing-fields upon fresh ground. If it makes its appearance then again, the only possible means of restricting its ravages is to remove the coops and birds to an entirely fresh site of the description recommended.

The symptoms do not admit of any misapprehension, and as the disease so speedily runs its course there is no reason why it should be confounded with any other. It generally makes its appearance when the chicks are about a fortnight old. The chicks then appear as if one or both of their legs were numbed or cramped. The muscles are affected, and in from quite a few hours, at times, to a full round of the clock, birds will be seen struggling about with one leg broken, or it may be with both, and lying practically helpless. The effect of the bacillus upon the bird is to inflame the membrane covering the bones of the leg, and also, but not always, of the thigh. The bones from this cause become exceedingly brittle, and break at the pull of the cramped sinews. Death, of course, follows at an earlier or later moment according to the stamina of the chick affected, but as it is invariably the finest and best birds which are attacked, they may linger some time. As I said, there is no cure, and birds affected are best killed and their remains burned. I have noticed that in a season when bright hot sunshine alternated with cold, strong showers, the disease ran a quick and violent course.

The other so-called "cramp" is really due to sunstroke, which causes the young chicks smitten to run a little way with a staggering gait, when they fall over and lie kicking upon their backs. This action, which is apparently quite spasmodic, may be repeated two or three times, but they soon die from suffocation, the result of the convulsions induced by the sunstroke. If taken in

time, and the birds be quickly placed in deep shade in a cool place, and be given fresh cool water to drink, the probability is that they will recover; but so long as they remain exposed to the sun, there appears to be no chance for them. This malady must not, however, be confounded with froth, a totally different thing, in which, however, the symptoms are at first somewhat similar.

Under the circumstances it may be as well to describe the latter affection now, so that by immediate comparison the difference may be made more apparent. Froth, which affects other game-birds besides pheasants, is due to the larva of the Cuckoo Spit or Froghopper. The larva or grub which produces the spit or spume upon grass and plants when swallowed alive by pheasant chicks will kill them in from four to six hours. The symptoms are, as mentioned, similar to—but not identical with—those of sunstroke. The larva passes alive into the crop, producing irritation, and more or less fills them or causes them to be filled by a secretion of sticky liquid. This and the froth or spume from the grub enter the lungs, causing congestion and suffocation. The Cuckoo Spit in this form, particularly when young, is most dangerous to young pheasant life; but if killed by the chick in the process of being swallowed is practically harmless. Once the birds are dead it is easy to ascertain whether sunstroke or froth has been the cause of death by an examination of the crop. In the former case this is usually full, in the latter nearly empty, and the presence of the larva—it is rarely that more than one is swallowed—in the crop will be abundant proof.

The only thing that can be done is to provide any chicks affected with supplies of fresh cold water, and offer them every inducement to drink.

When there occurs what is called sometimes a “heavy

fall" of Cuckoo Spit, a happening more likely on the younger grasses, &c., of a good rearing-field than upon old pasture, the best means of removing it is to "cross and again" brush the ground with thorn and gorse bushes under a chain-harrow well weighted. The coops should, of course, be removed, but may be returned when the pest is no longer present in the larva stage.

The worst disease which has affected pheasants of late years, and which I am very much afraid is steadily gaining ground, is the fell scourge known generally as enteritis. It is identical with or akin to chicken cholera, which has more or less always existed in dirty and insanitary poultry yards, and when occurring among pheasants is probably the form which that disease takes among game-birds. It is what is termed an epizootic disease, and is caused by a microbe which sets up a state of extreme inflammation throughout the bird affected, rapidly causing death. There is no properly defined cure for it, and all that can be done is purely preventive. In the chapters on feeding and water-supply I have shown to a large extent what the means taken should be to prevent an outbreak of this disease, and if it occurs the fullest steps must be taken to stamp it out effectually. Provided the soil of the preserve upon which enteritis appears is reasonably pure and fresh, no great difficulty should be experienced in doing this. Of course, the first thing is to kill off and burn the bodies of all affected birds. It is no use hesitating upon this point; the trouble must be dealt with in a drastic manner. The contaminated ground must be treated to a thorough watering with a solution of carbolic acid—a 10 per cent. one usually suffices—and then be dressed with a mixture of gas-lime and sulphur. It is, however, necessary to point out that in dealing with the land in this fashion the carrying out of the work must be placed in

experienced hands. For the most part, however, when there is a serious outbreak of enteritis it occurs upon soils of such nature as to be scarcely worth troubling over, they being of a character as favourable to the disease as they are unsuited to pheasant-rearing.

The contagion of enteritis undoubtedly emanates mostly from dirty and insanitary poultry-yards; but the conditions being favourable, it is presumably bred in foul pheasant aviaries and rearing-grounds which have been used again and again for the same purpose. From the one it can be brought by the foster-hens if they be carelessly chosen and treated, or upon the hands, clothes, or boots of the keeper or person supplying and bringing them to the preserve. From the latter as well as the former it is disseminated in a dozen ways—by actual contact, in the water, on the wind, may be mentioned as the most salient and patent. For its development and spread, cold nights and dewy mornings are the most favourable conditions of weather. For its prevention, pure fresh soil and pure fresh water are the two sole necessities, backed up by extreme cleanliness of all vessels, materials, and dead stock employed in connection with the practice of rearing in all its details.

Simple cold or catarrh in pheasants is in itself not very serious, but if neglected renders the birds very susceptible to roup, a highly contagious and fatal disease, which, however, may break out without any assistance from simple catarrh, which citrate or sulphate of iron—1 drachm to 1 pint of water—in the drinking-water usually cures.

Roup is a virulent disease, and affects the inner membrane of the mouth, windpipe, and crop. The first symptoms are those of a cold. The affected bird sneezes, and there is running from the nostrils. This soon turns to a viscid discharge of offensive odour, then the face

swells up, and there is a running from the eyes. Loose patches resembling cheese form upon the mouth, throat, and round the nostrils and eyes. With the disease in this advanced stage, death soon supervenes.

Roup almost from the start of the disease is very infectious, and becomes highly so when the period marked by the viscid discharge is reached.

As will be seen, roup is easily detected in its earlier stages, and the treatment consists of complete isolation of all affected birds and destruction by burning of all dead ones. Directly the disease is detected the parts affected or likely to be so should be washed at repeated intervals with a 10 per cent. solution of boracic acid, and a 1 per cent. solution should replace the ordinary drinking-water.

It is only in the very early stages that it is of any use whatever endeavouring to cure roup, and birds in any advanced stage of the disease must be destroyed and burned. There is nothing else for it. All other birds likely to be contaminated should be treated as above, whether showing signs of the affection or not.

There is another disease, or a form of this disease, which is of a tuberculous nature. In this, the lungs and liver are more directly affected. It is much less common and usually slower in producing fatal results, but equally certain. I have observed it frequently in the wood-pigeon or ring-dove in certain seasons, and it is probably more frequently communicated to pheasants through these birds than in any other way. It produces extreme emaciation in birds so affected, and is apparently beyond the reach of cure.

Diarrhœa, frequently termed scour, is sure to occur amongst some of the pheasants at one time or another. Wherever hard-boiled egg—against which I have written—is employed, it is likely to be of continual occurrence.

In any case, directly it makes an appearance dispense with all egg-food, and substitute for what has been given a diet purely of barley-meal of the finest grinding and quality, or in bad cases of pure wheaten flour. This should be made up into a crumbly state with the liquor in which lean mutton (from which all fat has been removed) or rabbit flesh has been well boiled. If this fail to act as desired, a little rice water may be given. Scour of this kind must be distinguished from another form which is set up by the pheasant chicks consuming the leaves and seeds of the Mountain Flax, which is in a state of growth attractive to the birds from the middle of June to end of July.

Liver disease, which is due alike to absence of grit in the coverts—a matter to which attention has already been drawn—and to excessive, or even on some soils ordinary, feeding with maize, may be prevented and alleviated by removing the cause. In cases where it makes its appearance, plenty of fresh green stuff, such as lettuce, kale, or cabbage, should be strewn about the coverts. Birds die very speedily from liver disease once it takes hold of them.

The tubercles which are apparent in the livers of some dead pheasants are due to scrofula, a disease not often met with nowadays, except where birds are severely in-bred, or are the resulting produce of unhealthy parent stock.

Scurfy legs, from which pheasants suffer at times, is almost invariably communicated to them in early life by farmyard and other foster-hens already affected. If the hens be treated as recommended in the chapter on Rearing (*vide* p. 41), scurfy legs will not be in evidence. It is due to a parasite, and is cured by an application of carbolic ointment, followed by daily dressings of vaseline and castor-oil in equal parts.

The infantile condition of vent-binding must be looked

for and treated with sweet oil or vaseline outwardly applied.

Tapeworm is an affliction of fairly frequent occurrence amongst pheasants which may be mentioned in passing. The entrails of birds so suffering should be destroyed.

Three species of tapeworm affect pheasants, and as one of these species passes a portion of its existence—that of the larval state—in the common fly, it may very well occur that birds acquire the parasite from consuming these insects. The necessity of keeping the rearing-grounds free from any refuse likely to attract flies is therefore evident. Insufficiently or badly fed pheasants have a habit of searching out any kind of dead animal food possible to find, which fact will account, either directly or indirectly, for a good deal of the tapeworm occurring amongst them.

Another occasional but fatal disease is a form of blindness of enzootic nature. The contagion is usually acquired from foster-hens brought from foul poultry-yards.

This completes the long list of pheasant ailments, to many of which other game-birds are subject; but before concluding it may prove advantageous to draw attention once more to what is, after all, the chief cause of the outbreak of most of them, viz., insanitary surroundings or insanitary treatment. It will be seen that whilst the originating poison producing some of the worst diseases is known, the means of cure have not been established, and that we are dependent mainly upon preventive measures for avoiding them. These may be summed up as pure soil, pure water, and pure surroundings; but it is necessary to point out that whilst we can with comparative immunity rear almost excessive stocks of healthy birds, it is not possible to maintain anything like such quantities all the year round. Heavy stocks of birds left over during the

winter cannot be maintained ; the breeding stock must be reduced to a minimum, and the ground be given its proper and necessary rest to clean and rehabilitate itself under Nature's infallible direction.

If preservers themselves would fully grasp these facts, and firmly instil them into the knowledge and belief of their keepers, far more and far healthier birds would be reared than is the case upon a very large percentage of the British preserves of to-day.



CHAPTER X,

PHEASANTS: Coverts.—Management and Planting.—Sporting Rides.—Flushing-Trigs.—Hedges.

ANY work upon game-preserving would be incomplete without something more than passing reference to the various descriptions of woodlands which come under the general denomination of pheasant-coverts. It is, however, manifestly impossible to include in a work of this kind any elaborate description of the formation of new coverts, although the improvement and regulation of existing ones must receive adequate attention. The planting of land for the purpose of providing cover for game upon any material scale involves the expenditure of such large amounts of capital that anything of the kind is not usually undertaken by the ordinary preserver. Upon the other hand, some small or even moderately extensive additions to existing coverts become necessary, and may be undertaken by him. To these it may be advantageous to refer; but beyond this it is hardly necessary to go in the present volume.

The choice of ground for a pheasant-preserve must, of course, mainly depend upon the quantity and suitability of the woodland upon it; but as will have been made apparent by remarks in earlier chapters, unless the soil and situation be of the right nature, the coverts may be, for all their apparent worth, practically useless for the purpose. Granted that soil and situation be adapted, the nature of the woodland must be also in its turn of such

character as to fit it for its purpose. In the case of old woods, the all-important matter of undergrowth will in all probability be fully met, deciduous as well as evergreen trees will equally provide portions, and we may expect to see a sprinkling of hollies which, with spruce and other fir, serve as protection to the birds from inclement weather, as well as from vermin and poachers.

Coppice of almost any character is well suited to pheasants, especially where plenty of mature trees have been left unfelled. Oak, hornbeam, chestnut all serve very well as coppice; so that where woods are regularly felled the new growth appearing is in every way adequate as coverts.

Coming to fir-woods, it is necessary to remember that larch, although much loved of pheasants, is by no means always the desideratum in either old or new coverts which is sometimes supposed. Birds affect larches very much for roosting purposes, and except the trees be reasonably sheltered by others, they offer the easiest task to the poacher working at night. Besides this, they are the cause of great restlessness amongst birds in rough weather. Spruce and other fir when young require a good deal of cutting out to fit them for use for roosting purposes by pheasants. There is, of course, no better cover for these game-birds, especially through the winter months and as sanctuary coverts; still, pheasants do not always take kindly to them, as they are, unless properly cut out, awkward for the birds to negotiate, and, as a rule, there is little attractive undergrowth amongst them.

As regards undergrowth other than coppice, it is always preferable where any berry- or fruit-bearing shrubs predominate. Thus hazel-bushes are very attractive in a pheasant-covert, so are whitethorn, wild rose, besides briars and wild raspberries. The rhododendron possesses

considerable attraction for pheasants, though for what particular reason it is difficult to determine. The absence of undergrowth in any plantations or woods intended for pheasants is, except in the case of fir-woods, a practically insurmountable objection, and even with a heavy summer growth of bracken, briar, and such-like, directly they die down in the autumn birds will commence to seek fresh quarters.

These are some of the points and considerations which will make themselves apparent and felt in connection with pheasant-coverts, and must always be provided for or against, as the case may be, when it is sought to improve existing or establish new ones. In the case of park-lands, however, the matter is different, as birds are usually reared where they remain, and accommodate themselves instinctively to the nature of their surroundings. Not infrequently a preserve or a beat—more usually a small than a large one—will lack that cohesion between the coverts which is so necessary in the former case, and often works greatly to the advantage of the shooting in the latter. Thus there may be several woods, &c., lying towards the outer portions of the estate, and possibly no main covert towards the centre; or, on the other hand, there may be relative disproportion between the woods and the open land which it is sought to remedy, or to connect up the coverts one with another when they are too far apart and do not work in well one with another. All or any of these reasons may present themselves from time to time to the preserver and warrant him in planting with a view to future requirements, although the time may prove considerable before he may be able to realise any considerable benefit for his enterprise. However, for the benefit of any so inclined or compelled, a few hints upon the formation of pheasant-coverts may prove useful as a guide to the work.

The best aspect for a pheasant-covert is a south-west one, and the best position the side of a hill, or on undulating ground facing the south-west quarter. The land should be dry, without being sterile, and must be intersected by running water at intervals. If there be a spring anywhere near the highest points, it may be utilised by being held back in dead-level leats, cut through the covert.

When planting, two descriptions of trees must be put in—one to form the wood, the other to provide a cover in the shape of undergrowth. Of the former, the bulk must consist of thick-growing trees, to provide, not only shelter for the birds from cold or wet, but roosting places and protection from the eye of the night poacher. As explained already, the larch must not be used alone when laying out new plantations; it and other similar trees should be combined with those of thick dark foliage, so that the one may form a protection to the other.

A preliminary, prior to planting out your land, is to render it somewhat uneven in its surface, such irregularity possessing many desirable attributes. This is best effected by shaping the land into fairly abrupt ridges. The next step is to plant or sow in places with such descriptions of berry- and fruit-bearing bushes as will provide ground-cover and food for the birds. It is not unusual for the contrary plan to be advocated as regards berry- and fruit-bearing trees, on the score that they provide reasons for loafers and small hawkers entering the coverts to obtain them or to make this a reason for petty poaching; but the circumstances must be exceptional to give reasonable ground for dispensing with such a very considerable attraction and benefit to the pheasants.

Then commence the planting, selecting from amongst the following trees: oak, ash, beech, hornbeam, chestnut,

Silver fir, spruce, Scotch fir, larch, holly, hazel, birch, sycamore, using and apportioning them according to the locality. The best guides one can have as to the most suitable trees to plant are those which prove the best growing and most successful in any woodlands already existing. Then, again, some parts of the country are more suited to one sort of tree than another, a fact which must be always observed and turned to profit in the choice of the main body of the covert trees. There is no doubt whatever that if a thoroughly protective pheasant-covert be required, the resinous trees must occupy an important portion of it ; and the hard-wood and undergrowth trees be provided rather as a relief from the monotony of the others, so as to lend variety to the plantation. There is, probably, no more difficult task than to produce an undergrowth in a wood where none exists ; consequently shrubs, briars, and the like should be carefully encouraged as soon as the trees commence to make headway. It is much easier to cut them out later on than to introduce them. The young trees should not be allowed to grow too thickly, and any which show signs of dying are best cut out at once.

The improvement of existing coverts is a matter which must always command the attention of the preserver, and in acting with that motive he must bear in mind that three ends are to be kept in view—actual improvement of the plantation, the rendering of it more adapted to sporting purposes, and the offer of greater inducement to pheasants to frequent it, with protection for them when doing so. On the first it need only be said that the preserver should, unless fully qualified, consult the correct authorities for any information he may require for the improvement in his woods ; but on the second, more may be said, and the chief point of interest is the formation of drives or rides. The non-sporting landlord, in general, has acquired

certain peculiar notions with regard to these drives or paths, and if the unhappy preserver happens to be tenant, and not owner, of his estate, he will meet with endless opposition should he seek to cut out these paths; however, tact and resolution in pursuing the desired end will work wonders. There is this advantage, moreover, that a tenant rarely goes to work in the wholesale manner in which some owners do, the result being more harm than good. The chief aim in cutting a drive is to secure positions from which fair shots can be had at either furred or feathered quarry, and to provide easy access to such portions of the covert as may be desirable. The great evil to be avoided is the opening up of the covert to the weather. There is a bad quarter everywhere, and the storms from this quarter should never be able to hit straight into the heart and home of the stock and the centre of the covert; otherwise there is an end to anything like a head of game and a thriving wood.

The next point is the thinning out of, and adding to, the trees. Wherever there is a vacant space it may be utilised by being filled up, or it may be left unplanted for use in connection with the rearing or feeding of the birds. Such vacant spaces, if properly situated, frequently prove very useful in more than one direction. The thinning out is a more involved affair than many think, and the preserver's scheme of doing this may in many instances be found at variance with those of the forester or others responsible for the woodland.

In the first place, the manner in which the woodman thins out the trees and cuts out superfluous growth may not be acceptable to the game-preserver; whilst again the former, in his ideas as to keeping his woods clean and clear, may be quite opposed to those of the latter. There is no doubt that one of the chief assistants

to the night poaching of pheasants is found in those particularly clear and well-kept woodlands which are the joy of the up-to-date forester; but without going so far as to claim that coverts should be kept as "a tangled brake," the more small dead wood there is on the ground, the more regular the carpet of low-growing briar, and the more general the fringe of small twig-like branches on the firs, &c., the less likely is the night poacher to risk a raid. His every step and movement are, under such circumstances, signalled through the covert to any keepers or watchers listening for them. Then, again, the ideal game-covert, without being in any way dark, should be thinned and cut out with some considerable reference to the birds roosting in the trees, both as regards sufficient protection from the weather and also from the shooting poacher who may seek to raid the coverts during such conditions of weather and moonlight as permit the possibility of successful operations.

Before dealing with the subject of the regular sporting rides through the coverts, what I may call keepers' paths require to be mentioned, as I rarely see any particular reference made to these useful means of threading the coverts. I do not mean the ordinary trodden paths distinctly marked, and by which anyone can pursue his way, but irregular, ill-defined ones, only marked by the absence of anything in the way of dead wood, briars, &c., which might give notice of approach. Any gamekeeper with even the slightest instinctive knowledge of woodcraft who marks out for himself some of these paths through his woods will be able to thread his way by them at almost all times, and provided he removes all such obstacles as those named, there will be—except to him—no marked track, and his coming or going will be practically as silent as he likes to make it. The advantage of the plan is

perfectly plain, and vastly conducive to the benefit of the interests the keeper has under his care.

What can be written upon the matter of the regular shooting-rides must be mostly of a speculative or negative character, so much being dependent upon the size, formation, and character of the woodlands to be dealt with. Except upon the very best organised shootings, it is of frequent occurrence to find the shooting-rides, be their formation what it may, wholly inadequate for the purpose for which they are provided. The reason mainly is that the ride is formed with more regard to its width on the ground than its width over what may be called the fire-zone, and also in regard to the description of trees flanking the ride. Given a fairly open covert—speaking with more reference to the thickness of the upper-growth of the trees than their closeness to one another—then the width of the ride may be less than if the reverse be the case, when the upper-growth is heavy and overhanging. The point to be considered is the scope offered for clear shooting at birds rising from or passing over the ride, not the actual width cleared or left clear of trees. In this respect a good deal depends upon the height of the trees, and in the case of young woods it will, whatever the spaces left unplanted for the rides, be necessary to increase the width as the trees grow up, if insufficient space be provided when the planting is done. Wherever there is a fairly abrupt bend in the direction followed by the ride, it may also be necessary for purposes of shooting to reduce this also, or considerable interference in the sport may be occasioned.

These are the chief points which the preserver must consider in relation to the rides through his coverts, and that affect practically all of them; but in regard to their direction and number he must be guided by purely local considerations. But it may be mentioned that where they

are driven round the bend of a hill or sloping ground, there is, as a rule, little advantage gained by levelling, *i.e.*, correcting the slope of the whole width of the ride; it is usually sufficiently effective if the higher side, to the extent of 6ft. or so, be so treated, thus forming a path for the guns to traverse, and suitable foothold for shooting from when birds are coming down. A similar one, though not necessarily of the same width, should be formed on the lower side for shooting purposes when the birds are coming in the contrary direction.

What are known as flushing-trigs generally are series of

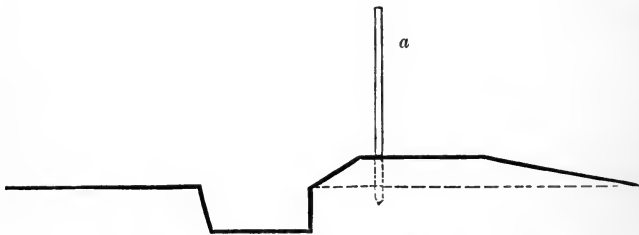


Fig. 16.—Section of Flushing-Trig. Scale $\frac{1}{4}$ in. = 1 foot.
a, Support for Netting or Sewin.

dry ditches and mound alongside; these are run through the coverts for the purpose which their name implies. Sometimes, however, they are far less pretentious, and are represented by small narrow belts, a few feet wide, from which all undergrowth and low cover have been cleared off. Their purpose in any case is to cause birds to rise before the guns, and the duty of providing them falls upon the game-preserved. They are formed either parallel to the rides, at a distance of some thirty to fifty paces, or are driven through the coverts at equidistance from ride to ride, between these and the boundaries, or a few yards within the boundaries. They are trusted to effect

the necessary flushing of running birds of their own and simple effectiveness; or this is made assured by sewin, or netting run along them. Upon the whole, however, and where the practice can be properly carried out, a system of well-established flushing-trigs should always be provided where necessary, to secure good shooting. A section of how the ground should be taken out for the purpose is given as a guide (Fig. 16).

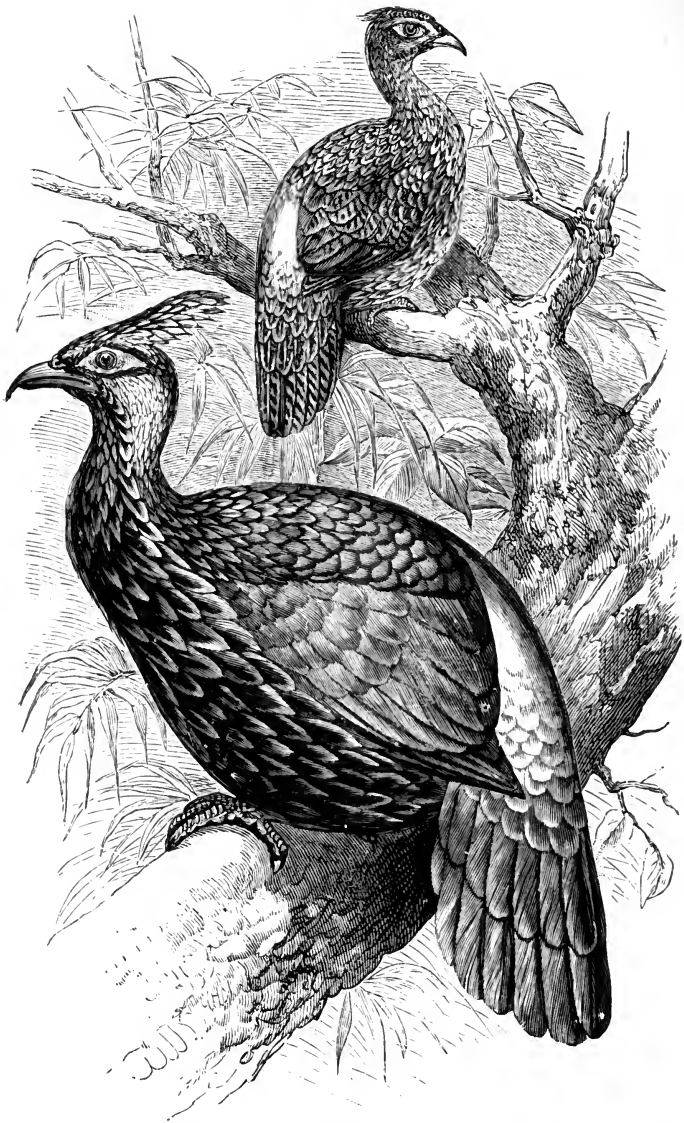
The provision—if such does not already exist—either by planting or by adapting one or more existing ones to the purpose of dark or night coverts, is generally necessary upon most preserves. These are coverts which are never, or very rarely, shot over, and remain practically undisturbed. Situated centrally, or as home coverts, they should consist, or be made to consist, of closely-planted spruce and Silver fir for the most part, with a slight sprinkling of suitable deciduous trees. Many birds which leave the shot coverts, and, never returning to them, would certainly stray, will find sanctuary in such dark coverts, and remain there. The matter is one of importance on some preserves, and where wholly or mainly wild-bred birds are reared, the system is capable of being extended and worked very successfully.

The last matter in connection with pheasant-coverts is that of the hedges which may surround them. In this connection a great deal may be accomplished for the betterment of the woods, &c., particularly those of some age, which, as a rule, are surrounded by more or less broken-down hedges and hedgerows. Speaking generally, wherever new plantations are made, the actual hedges or hedgerows necessary to provide the boundary for them should be put up from 12yds. to 15yds. from the borders of the trees, and the same plan should be followed when it is possible or necessary to remove and renew old

hedgerows belonging to the coverts. The reasons are several, and sufficiently plain; but if the harbour they offer to vermin, the assistance to trespassers and poachers, and the interference they offer to shooting be mentioned, the necessity for open sides to the coverts will be apparent. Of course, in exposed situations, a stout and high hedgerow serves a useful purpose upon the bad-weather side, but even then a fringe of dwarf beech, planted as a protection hedge between the wood and the actual hedgerow, serves an adequate purpose.

Almost without exception, the best hedge for game-coverts is formed of whitethorn or some other quick-growing, thorn-bearing plant, such as Myrobalan Plum, or similar suitable productions. On the outer side a ditch should be dug, but distant enough from the hedge not to interfere with its growth and subsequent development. The nature of the material employed, and the manner of forming the hedges, are usually governed by local considerations, however, and it is usually advisable to follow the practice which shows itself to be most suitable and successful.

Old straggling, rabbit-worked hedgerows are the worst possible boundaries to game-coverts, and should always be thoroughly and permanently put in order, or be improved out of existence and replaced in the manner previously described. For all that, I suppose they will be allowed to continue to exist. There is, however, no reason why they should not be maintained in proper condition, and also, under almost all circumstances, why the rabbits should not be cleared out of them, or, anyhow, be kept under severe control.



RESPLENDENT OR MONAUL PHEASANT

(LOPHOPHORUS REFULGENS).

One of the species belonging to the Impeyan group. It is gorgeous as to colour—gold, blue, and green—turkey-like in appearance,

CHAPTER XI.

PHEASANTS : Protection of the Birds.

FROM the moment when an estate comes under the care of the preserver he will find enemies of many kinds and upon every hand marshalled to prevent that success the full measure of which is the avowed object of his endeavours. The chief opponents of his purpose will be found in vermin and poachers, both of which, in the case of pheasants, appear to possess a favourable and an extended field for their operations.

Regarding mating and nesting-time as the beginning of the preserver's year, he is at once beset by enemies of both classes ; but I think it will be better to deal with the probable ravages of vermin in the first instance, and with those of human marauders subsequently. During the nesting-period the pheasant, equally with its clutch of eggs, is more likely to suffer from attacks by winged vermin than from four-footed creatures. At such times the pheasant, in common with most game-birds, loses all, or nearly all, its natural scent, and thus escapes the attentions of poaching dogs and cats to a large extent, and also in a measure those of smaller four-footed vermin. Of course, the actual nest is well concealed, but the hen pheasant is as likely as not to place it in hedgerows alongside the high-road, adjacent to well-frequented paths, in exposed spinneys, and a dozen other places similarly ill-chosen from a protective point of view. Were it not,

however, for the remarkable provision Nature makes, such nests would be discovered and destroyed time and again by poaching dogs and cats. For all that, the preserver would do well freely to draw upon them, and as soon as the hen bird broods, the clutches should be removed and hatched out under foster-hens; for whatever immunity she may enjoy during the earlier period of her nesting operations, the chances are all against a successful incubation or rearing of such broods in their entirety. The reason that small vermin, such as stoats and weasels, and in a measure rats, do not interfere seriously as a rule with nesting pheasants, is due to the fact that these vermin are not much on the move at this season of the year, whilst, in addition, they find an easy and fruitful supply of provender in the numbers of small birds and young rabbits which are at such times obtainable.

The worst enemies of the pheasant at nesting-time are winged vermin, notably crows and rooks, magpies and jays, and it is against these that the game-preserver must be chiefly on his guard. Where jackdaws abound they prove equally destructive, and once the young birds are hatched out the sparrow-hawk will come upon the scene. Look-out, too, must be kept for the workings of the hedgehog. These complete the list of vermin which will attack and destroy the eggs and chicks of the wild-bred birds, if steps be not taken to protect them.

In a subsequent portion of this work the means and manner of destroying vermin will be adequately dealt with, as also the steps to be taken to prevent foxes from interfering with the sitting pheasant. At the moment I propose to call attention only to the dangers from which birds may suffer, so that the necessary steps, to be detailed later, may be taken to protect them. Directly a nest is attacked there will be evidence in the shape of egg-shells,

moved eggs, and general disturbance of the sitting hen. Damage of this kind is invariably due to crows, rooks, or magpies. These also and the other vermin named more frequently attack the young birds. From this period onward the work of vermin will become of a more general character as regards the wild birds, and will be dealt with when the occasion arises.

Coming to the hand-reared birds, those in the rearing-field must first receive attention, for from the very start the young chicks will require all the protection which can be afforded them, being exposed as they are to almost every kind of danger. The means to be taken to protect them should be as largely preventive as possible, for whatever the class of vermin attacking them, it is far easier to deal with them before they make inroads upon the birds than after they have been made the subject of attack. Inasmuch as the vermin do not spring from amidst the coops, it is plain what are the main steps to be taken against them. The hedges and ditches around should be searched for signs of rats and other small vermin, and, wherever there may appear reason for it, small run traps should be placed in any likely positions, baits being used to attract them. The probability is that if rats scent the rearing-coops, as they are sure to do if they be at all plentiful about the estate or the buildings thereon, they will make their way into the field through any gates providing means of egress or ingress, through any drains, or along surface ones passing through the hedgerows. These places should be properly served with traps, and, in addition, they should be set about the outside rows of coops. It is, however, very little use employing traps at all unless they be carefully set at first and regularly looked after. Of course, this means taking trouble; but to an extent this may be avoided if the coops

be properly protected and so constructed that rats cannot get into them at night. Upon the other hand, the young chicks, when let out by day, may also be snapped up by some of these vermin which may be in hiding, consequently close watching is very necessary.

At this early period, as already stated, stoats and weasels are not much on the move, and not much to be feared except at night-time, when, if the opportunity for them to get into the coops exist, they are almost certain to take advantage of it. Naturally the traps cannot remain set by day, but it does not occupy a great deal of time to set and reset them daily, and the process ensures security for the stock.

Most of the losses which may occur from vermin amongst very young pheasant chicks are due to more or less persistent attacks by winged vermin. In this category, crows and rooks (so inclined), sparrow-hawks, and occasionally kestrels (when nesting early) will prove the most likely delinquents. As a rule it is daring and cunning individual members of these species which inflict the most damage, and it is equally the case that the gun proves the most effective weapon to employ against them. At the same time, well-placed traps, attractively baited, set around the outskirts, will frequently account for them, but, as said before, the gun is invariably necessary to cope with winged vermin working upon these lines, because it is generally at the most unexpected times and in the most daring fashion that the young chicks are carried off. It will be frequently observed that winged vermin bent upon raids of this kind will regularly prospect the ground beforehand, and if steps then be taken to settle them, such enterprise may be nipped in the bud.

Wherever the rearing-field or fields are of any extent, it will be impossible for one keeper effectually to supervise

the whole of the coops, and it may be necessary to put down two or three extra hands for the purpose; but probably the best service in this respect will be provided by one or two active guard-dogs attached to wires (Fig. 17) led up and down the outskirts of the lines of coops (Fig. 18). It must not, however, be expected that the same dogs as may be employed at night-time can be utilised by day: there must be a change of service.

Trouble is also likely to arise from the attentions of

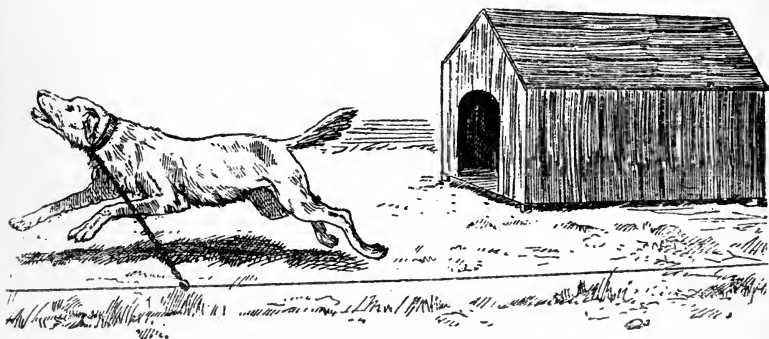


Fig. 17.—Guard-Dog attached to Wire.

poaching cats and possibly marauding dogs—the former by day and the latter by night. Poaching cats will occasionally get amongst the coops at night, but finding them secure, lie up in the hedgerows or even in the long grass of the rearing-field, and work stealthily and successfully amongst the young chicks wandering—for them—far afield from the coops. Marauding dogs will sometimes get amongst the coops at night and overturn them, but with careful watching anything of the kind should be impossible.

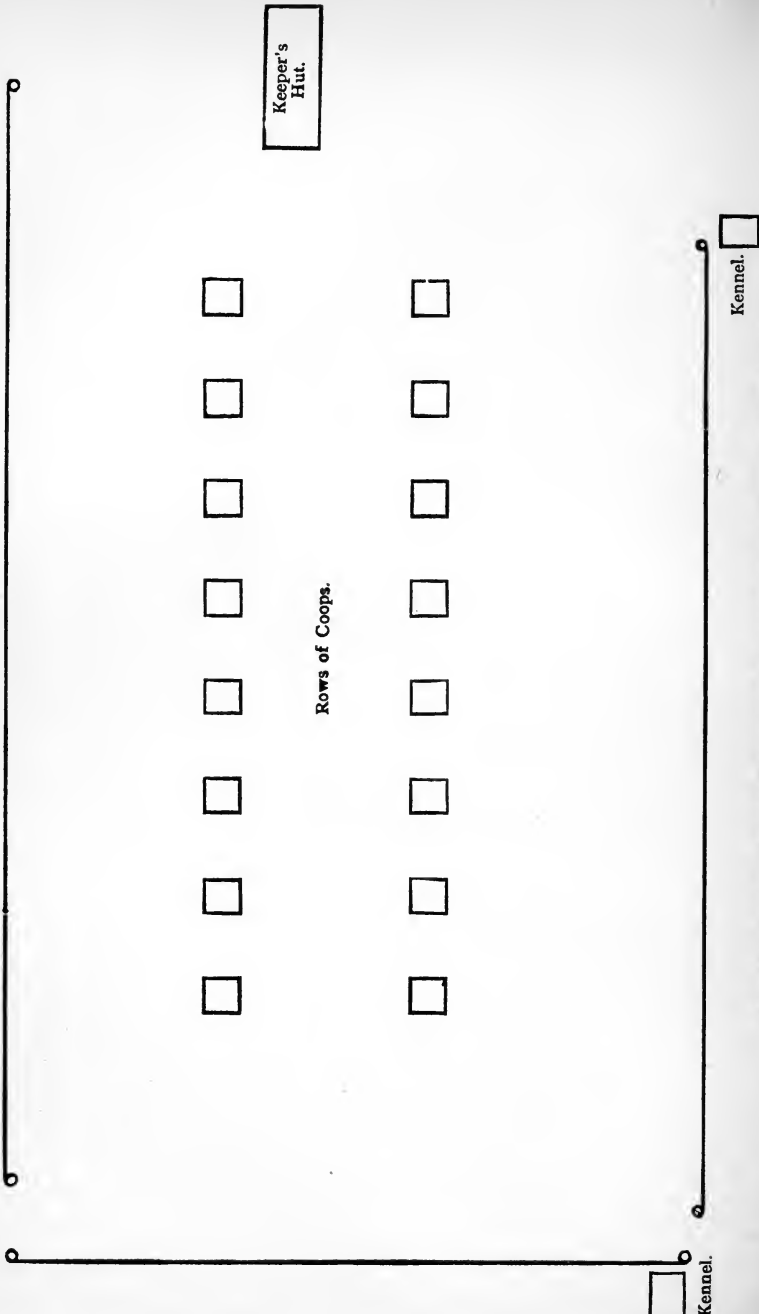


Fig. 18.—Plan of Rearing-Field, showing disposition of Wires for Guard-Dogs.

This brings us to the subject of keepers' huts (Fig. 19), of which there are a number of patterns upon the market at reasonable rates. The essentials of a keeper's hut for the rearing-field are that it should be easily portable, light, and conveniently provided with all the essentials he may require for his work. Included in them must be a small stove, burning oil for preference, with which he can provide boiling water and otherwise prepare the birds' food. The

advantage of anything of the kind will be apparent; but upon small preserves, where the rearing-field is within easy access of the keeper's quarters, its use may be dispensed with. It is necessary in connection with this matter to point out how very frequently a hut of this kind is allowed to become the site of an accumulation of all

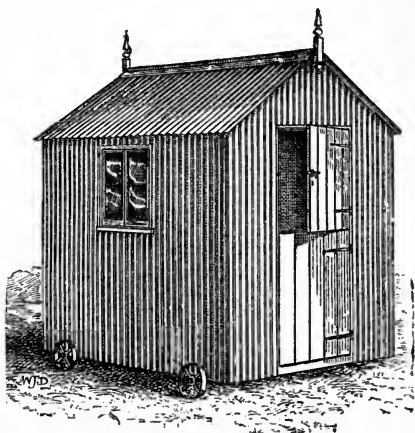


Fig. 19.—Keeper's Hut.

sorts of disease-bearing refuse, which proves an attraction to rats and other vermin. All such offal should be removed or burnt, and the position of the hut changed from time to time.

The present is a favourable opportunity for mentioning the great assistance in his work a keeper obtains from the possession and employment of a good pair of binoculars, especially when fitted with night lenses. Both for the purpose of examining his young birds without disturbing

them unnecessarily and for detecting the presence of vermin from a distance, such an acquisition is invaluable. I think that such should form an item in the impedimenta of all gamekeepers.

Turning to the protection of pheasants from poaching, the preserver is confronted at the outset of the season with a variety of it for which there is no necessary reason, namely, egg-stealing. If there were no buyers the practice would cease to exist, and although of late years, through various causes, the evil has considerably declined, the dishonesty of dealers, and, I regret to say it, the indiscretion—to employ no harsher term—of a certain class of keepers, continue to encourage the practice. It will best serve the purpose if I point out the means which exist for the disposal of stolen eggs, because then the preserver who keeps his eyes and ears open will be aware of the possibility of a traffic existing in his property of this nature, and thus be in a position to prevent it. Probably in the present day the worst offenders are the owners of pseudo-game-farms—men who, with a few pens of pheasants, buy eggs from anyone who may offer them and then re-sell to those ill-advised enough to purchase without any reference or inquiry as to the standing and trustworthiness of the source from which they are obtaining their supplies. There is really no excuse for anything of the kind, as where eggs require to be bought there are a score and more of game-farms of the highest repute to which to apply. The dishonest higgler is usually the medium for this traffic as between the egg-stealer and the wholesale buyer, and the regular appearance of gentry of this kind in a district is generally a sure sign of something illegal or underhanded being in progress.

The sale and purchase of eggs as between one preserve and another should always be effected by the preservers

themselves, or with their full cognisance ; nor is it always advisable for even the exchange of eggs to take place without their approval and full knowledge. There is a kind of keeper—it is no use blinking the fact—who by his actions reflects very adversely upon an honourable class, and who contributes to a large extent to the evil of egg-stealing. These are men neither successful nor competent in their calling, who occupy positions as keepers or under-keepers upon large and small shoots where the control is lax, who sooner than allow the fact of their incompetence or want of success to come to the knowledge of their superior will pay for eggs out of their own or indirectly out of their masters' pockets, and these men constitute a class largely responsible for egg-stealing. They will go to the unauthorised dealer or encourage the labourers, loafers, &c., to bring them eggs from adjoining beats and neighbouring preserves. The remedy in such case is obvious, and lies with the preserver himself or the head keeper.

The casual or regular egg-stealer is usually found in the ranks of the discontented farm-labourers or the village loafers—they are much on a par, but I count the latter the lesser evil of the two, for he will only steal and sell, whereas the latter will destroy as well as steal, and sometimes practise the former alone, stamping out every clutch he can discover in a foolish attempt to assert his "rights." In all probability the best plan to counteract anything of the kind is liberal payment for all nests discovered and reported to the keepers. Payment for same is usually made at the rate of 1s. per nest, but the plan should be, as stated, on liberal lines, and endeavours to evade fair pay for a fair find be avoided, or the nests found are more likely to be destroyed or removed than reported. The system is liable to abuse if carried too far, however, and

nests reported other than within fair view of the roads and paths should not be paid for. A free display of notices of substantial reward for information as to egg-stealing, issued by either the Protection Society or by the individual preserver, exercises a very salutary influence at nesting-time.

The young birds as well as the mature ones will require protection right up to the commencement of the shooting, because the chance always exists of young and old birds being poached alive. In fact, in certain districts this class of game-stealing is very prevalent. The poaching which occurs during the shooting season is of a different nature, and will receive due attention in another portion of this work; but it will be as well to deal with the kinds of spoliation sometimes practised during the rearing season now. They comprise, besides egg-stealing, hingling and netting.

Hingling is sometimes most extensively carried on, and often proves very successful. It consists simply of driving the birds into previously prepared snares. Either the poachers walk the birds forward through the covert, or have dogs trained to do so. The general idea is that the snares or springes are placed at one end or side of the covert. This is erroneous; most execution is done by laying them about the centre. By this means the birds are more thoroughly and safely driven backwards and forwards, which is often done several times in succession. In the early part of the year, when birds are being bought, they are taken in fixed springes alive, otherwise in the common snare.

Plain snaring may take place wherever there is an outlying pheasant or two—along hedges, on the sides of the brooks and wet ditches where the birds drink, or around the feeding-spots. This kind of poaching is easy,

expeditious, and wholesale, so the watch kept on the coverts must be continuous. Alarm-guns are very useful by way of prevention in alarming the poachers, and giving timely notice to the keepers of the kind of work being carried on.

Netting is similarly practised. A long-net is spread, and the pheasants are driven into it by dog or man. It is not so effective as hingling, but it is a murderous procedure in experienced hands.

The chief means of protecting the birds from the several modes of day poaching alluded to must consist in continual and careful watching of the preserves. Nothing succeeds like this, and the keeper who is always turning up at odd times, and quite unexpectedly, on different portions of the estate, is more feared, and at the same time produces a more beneficial effect on any persons inclined towards these practices of poaching, than anything we know of. It is the practice of some keepers to have particular rounds, which they traverse at certain intervals, with the result that it is extremely easy for poachers to avoid observation, and to shape their courses according to where they know the keepers to be.



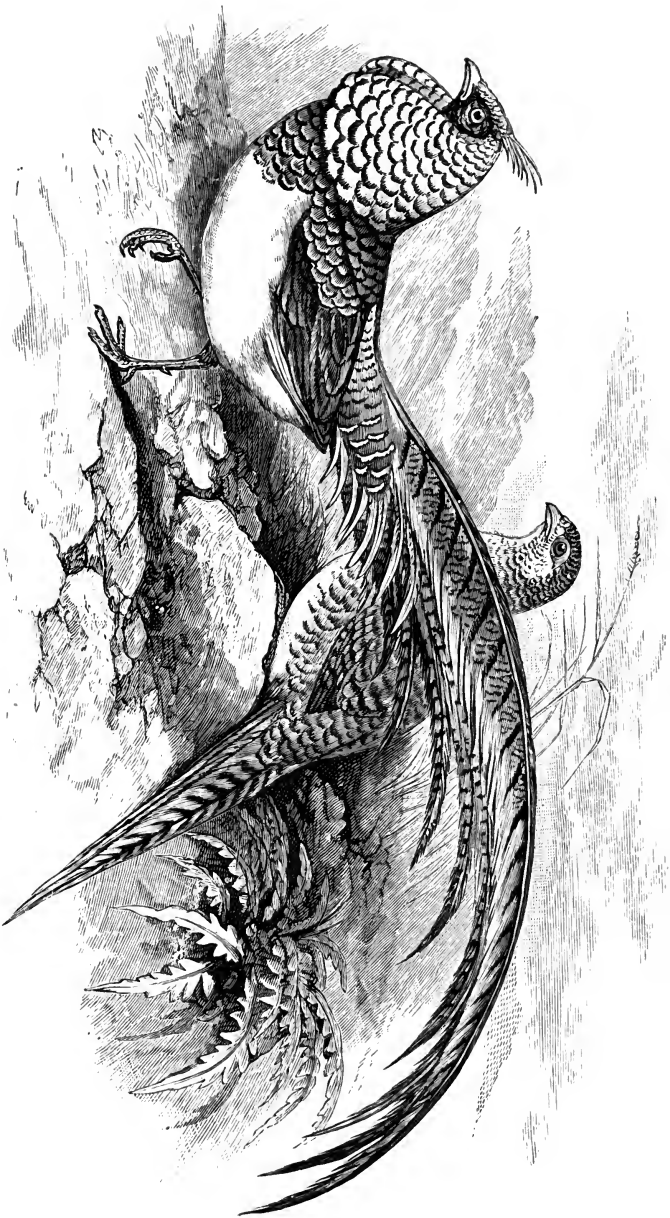
CHAPTER XII.

PHEASANTS: Miscellaneous Matters.

IN connection with the preservation of nearly all game there crop up from time to time a number of matters of minor or side importance which cannot be ignored in a work of this kind, but which it is considered best to deal with in a general chapter rather than interrupt the main issues by interpolating details likely to confuse.

Ants' Eggs.—Young pheasants ought to be provided with a supply of ants' eggs (so-called) if possible. There are many substitutes; but the real article is very much appreciated, and beneficial to boot. As a rule, a fair supply of them may be provided in most countries if pains be taken to do so. They will keep for a long time, and as the chief supply is available from the ant-heaps when the demand is largest, it is possible to secure an adequate supply. Where nothing of the kind is available locally, sufficient quantities may be obtained from tradesmen who make a speciality of the article. A substitute which I have employed with success is found in broken wheat which, after being soaked in chamber-lye for two or three days, is then dried off over a stove. A small quantity, say 1 part added to each 64 parts of chick-feed, given occasionally, meets the necessity of the case.

Insect Food.—The provision of a suitable substitute for insect food when absent is not wholly met by the



LADY AMHERST'S PHEASANT

(CHRYSOLOPHUS AMHERSTIÆ)

A species that will probably be employed in coverts as a game-bird. Unlike its relative the Golden Pheasant, it has a white breast and a black-and-white tippet.



recommendations I have given in the chapters on feeding and rearing. Most of the firms who cater for preservers' requirements supply preparations specially designed to meet the want, and I should like to be able to single out one of them as being entirely satisfactory and likely to prove suitable to the average preserver; but this is impracticable where so many nearly achieve what appears at present to be the impossible. I am inclined to think that an efficient substitute will be found in some preparation of dried fish, probably in some of those forms of sun-dried, unsalted fish-roe which are a cheap and an abundant commodity in some portions of Europe and elsewhere, and of whose merits in this respect I have some experience. As things go, however, it is impossible to do more than offer suggestions, because whatever may be recommended to replace natural insect-food, it must fall short in one direction or another, and it is likely that if preservers would depend much more upon correct choice of rearing-fields in regard to this point they would serve their interests far better than in endeavouring to find a satisfactory substitute.

Catching-up Birds.—When pheasants have to be caught up for penning purposes, or for one or other of the reasons besides which make this operation necessary, they should be secured by those means most unlikely to cause unnecessary fright or inconvenience to the birds. When hen-birds are turned away from the laying-pens, others will have to be caught up again sooner or later. The first-named should be marked in some effective but simple means, so as not to be included in any future catching which may be undertaken, as fresh birds should be provided each season.

There are many forms of traps upon the market for taking single birds; but this is often a troublesome and

tedious process before the necessary number of the proper birds required are secured. I have employed a far better and more wholesale way of catching-up birds, which gives

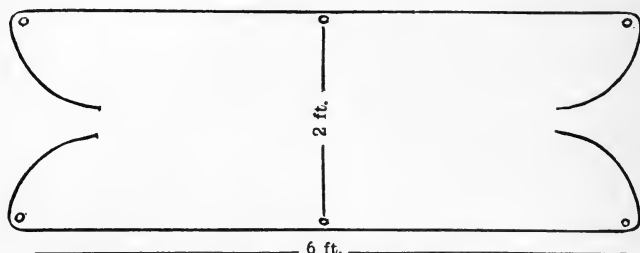


Fig. 20.—Plan of Pheasant-Catcher.

little trouble and entails small expense. Of this I give a plan and dimensions. It consists of a double open-ended cage or pen (Fig. 20), constructed of wire-netting upon

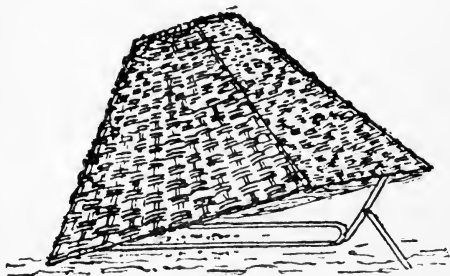


Fig. 21.—Burgess's Pheasant-Trap.

wooden or iron frame, thoroughly portable by one man, and made to fold and pack away in a small space.

This pheasant-catcher consists of a wire pen, 6ft. by 2ft. wide by 2ft. 6in. high, made of galvanised wire netting attached to an iron or wooden framework. The

side netting extends to about 8ft. in length, the end-pieces being partly laced together, and turned inwards to form the entrances shown. Sufficient of the end-pieces is left unlaced to admit of the entrance of the birds, which, having passed into the catcher, cannot make their way out. The supporting standards are made sufficiently long to admit of their being driven into the ground.

The dimensions given may always be extended if the number of birds to be caught up be considerable; but the sizes given provide a very handy trap, which may be readily set up and moved from place to place as required. Some dari or maize placed as food within the catching-pen, and with one or two lines of scattered corn leading up to the entrances, is all that is required to lure the birds easily into the trap. It may be used successfully to take almost any kind of bird, if the mesh of the netting and size of the entrance-places be altered to suit the quarry. I have employed it most successfully for wood-pigeons.

There are, in addition to this manner of catching-up pheasants in large numbers, various kinds of pheasant-traps which take a single bird at a time, and may be employed with advantage where it is not necessary to

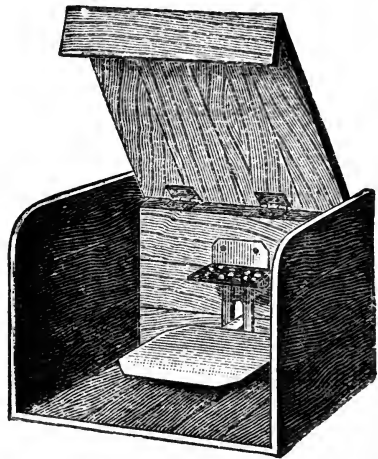


Fig. 22.—Burgess's Patent Box-Trap for Wood-Pigeons or catching-up Pheasants

catch-up large quantities quickly, or for securing odd and outlying birds. I give illustrations of two of the simplest and most effective of these traps (Figs. 21 and 22).

Proportion of Cock- and Hen-Birds.—The question frequently arises as to what is the most advantageous proportion in which to have the birds at the end of the season, and how to determine what that proportion should be. It is frequently evident that the relative number of hens left over in covert is too large for the number of cocks, with the result that a large percentage of unfertile eggs occur amongst the wild-nesting birds, and many of the hens receive but scant attention. I think it will be found that a better proportion of cocks to hens for the breeding-stock in covert would be one to three. It is a matter of considerable importance, particularly where few or no penned birds are maintained, and one that requires careful consideration by the preserver, and it will be found an excellent plan if from about the first or second week in December one small covert at least upon each preserve or beat be selected for reservation for the breeding-stock or the main portion of it. In this way, by careful feeding and coaxing the birds it will be possible to assemble in this particular part—of course it should be central—of the preserve such numbers of birds, in the proportions of one cock to two or three hens at the most, as shall suffice for practically the whole breeding-stock for the coming season.

The Euston System of Hatching Pheasants. — This system, initiated by the Duke of Grafton upon his Euston estates, is one which, though not largely adopted, has been greatly discussed, and has for its aim the rearing of pheasants practically wild, but without the disadvantages attaching to hand-reared birds, such as tameness or poor flying qualities, or equally to avoid the losses to the

nests of wild birds through disturbance or by larger vermin. The practice followed at Euston is to take all the eggs from outlying nests, or where birds are liable to be disturbed, and either add them to the nests of birds nesting under more favourable conditions, or to incubate them under hens until near the time of hatching, when they are transferred to the wild birds' nests.

Carried out in a thorough and workmanlike fashion as the system is at Euston, it has proved eminently satisfactory, and the quality of the shooting has exhibited a decidedly improving tendency. Of course, the *quantity* of birds annually produced by this system cannot extend to the same limits as where birds are hand-reared, and the amount of trouble and labour expended is greater; whilst the standard of keepers necessary for carrying out what is rather ticklish work, requiring great care and observation, must necessarily be higher than in the case of ordinary preserves.

The Duke of Grafton's birds are noted for their fine flying powers, and skilled shots revel in the increased quality of the shooting they offer, as against the greater quantity but less sporting value of birds hand-reared in the ordinary manner. Personally, the system appeals very strongly to me; but it is one which can scarcely be applied to the average preserve, although its adoption by many preservers is easily possible.

White and Pied Pheasants.—It is a not unusual practice amongst preservers to secure quickly any specimens of white or pied birds which may occur amongst their wild stock; but these birds may be made to serve a very useful purpose, particularly amongst the boundary birds, because it is self-evident that, so long as these prominently-coloured birds remain, they and the rest of the neighbouring stock are not being interfered with by poachers or

otherwise. It is a very good plan, whenever any of these sports occur, to employ them in the direction named, instead of keeping them as show birds, as is usually done.

In the same way, a few cock-birds of other than the ordinary breeds, utilised as sentinel birds in this manner, always serve a useful purpose.

Food-Losses through Wood-Pigeons, &c.—Most of the loss of food fed to pheasants on the open ground is due to its consumption by Wood-pigeons and Stock-doves (where the latter exist in any quantities). It is a difficult matter to deal with, but I have found that neither of these birds will go in under wire-netting when it is stretched horizontally about 1ft. above the ground. It need be fixed only high enough to permit the game-birds to go in and feed underneath it, and should be laced together in pieces from 4yds. to 5yds. square and be stretched upon short, thick stakes, driven in the ground, or from tree to tree. The mesh may be determined by the size of the birds it is necessary to keep away from the corn or other food put down. They will feed under netting the mesh of which they can go through, but will not do so otherwise.

Condiments for Pheasants.—It will have been noticed that in the chapter on Feeding scarcely any reference is made to the use of condiments or stimulating foods for pheasants. Personally, I am of opinion that a great deal too much resort is made to the employment of highly-spiced feeding materials, many of which, possessing a temporarily strongly stimulating effect upon birds, produce a corresponding reaction, with attendant deleterious effects. At the same time circumstances certainly arise occasionally when judicious employment of something of the kind may serve to combat and overcome the influences of long spells of bad weather, sudden and unseasonable changes, and the like, which set up a more or less debilitated state

of the stock, whether young or old. Against some of the specifics and materials of stimulating nature supplied by manufacturers of such articles there is little to be said, if preservers would employ them only according to directions, and cease their use immediately the state of affairs prompting resort to them had passed away. This, however, is not by any means usually the case, and stimulating additions to the diet are continued until serious injury results to the general health of the stock.

There are one or two materials to which but little objection can be raised, and in periods such as have been named, when long-prevailing wet and cold, singly or combined, or sudden spells of the same occur, recourse may be had to them *temporarily* with advantage. Ordinary mustard condiment of best quality, such as that manufactured by J. and J. Colman, is a useful material for this purpose, employed in the proportion of $\frac{1}{2}$ lb. of the mustard to each bushel of the ordinary soft food given.

Other spices which possess a value and do not leave bad after-effects are powdered fenugreek and powdered cummin-seed. Peppercorns and pimento may also be used without hurt in not greater proportion than 2oz. of either of the others together, the same quantity of fenugreek—4oz. of all—to each bushel of food. When given to young chicks it is better that the spice be reduced to powder and incorporated with the meal in the proportions named.

It occurs occasionally that hand-reared birds which have come along all right and under favourable conditions, reach a stage when they seem no longer to progress, and "go off their food." At this time a little of some or all of these condiments may be given in the event of an entire change of diet failing to secure the needful result.

CHAPTER XIII.

THE PARTRIDGE: Natural History.—The Common Partridge.—The French Partridge.

WE have in the British Isles two species of partridge—that which we know as the Common or English Partridge, and the so-called French or Red-legged bird, an importation of comparatively recent times. Both species resemble one another in some respects, as they are dissimilar in others. The former is by far the superior game-bird, and lends itself to the influence of preservation far more easily and readily than does the latter. It possesses many claims upon British sportsmen of all descriptions, for besides being practically indigenous, the sport which it affords extends alike to the most modest and to the most exacting of game-shooters. Of late years the systems of preservation to which it is subjected have been greatly extended, however, and in many districts the partridge occupies a position quite unthought of not very many years ago. It is, however, as the popular game-bird of British preserves that it is chiefly held in esteem, and as such it is first necessary to deal with it.

The partridge's beau-ideal of a home is an essentially English spot in the landscape. A bright warm wheat stubble, a pasture growing such grasses as form its best-liked cover, with a little expanse of broken ground, overgrown with brake, hard by, and you have just the locality a partridge loves to haunt. In character, it is a quiet

easy-going bird, and one that is little concerned when hustled about, provided always that the bustling be not overdone.

It is no difficult task to specify the localities suitable to partridge-preserving; it would be far less easy to name any portion of our country where one might not find it possible to raise a covey of birds. If it be given a fair chance and afforded some inducement to establish itself, the partridge is quite capable of doing so. It needs little help, and is far less dependent on the protection of man than the pheasant or the grouse. Any locality where there is a fair sprinkling of arable land, and where the ground is not, although wholly pasture, of a partially uneven and broken character, will serve—a low bit of brake here, and a few rods of common there, alternating with close-cropped hedges to form the divisions. But where it is painfully evident that the land is used for grazing purposes only, by its stiff walled hedgerows and monotony of meadows, then the partridge coveys may be few and far between. Upon the high bleak moors, too, it finds a habitat agreeable to its taste, and in Wales, Scotland, and even the wild islands on its northernmost coast. On the dreary, inhospitable waste of Dartmoor it is found, thriving, yet solitary, far from the cultivated fields on its outskirts. Thus, it lends itself under all favourable conditions to the desires of the game-preserve, and no great expense or trouble is needed upon his part to ensure a fair supply of these birds.

The habits of the partridge are very interesting. In the early spring it frequents the fallows and the pasture-fields, rarely quitting them, except for the low copse or spinney to sun and dust itself, or to shelter in during severe weather. In the first week of February the mating season commences, and by the middle of the month pairing

is in full swing. A good deal of disagreement and fighting amongst the males characterises the pairing of partridges, whose mating is, however, somewhat fickle, depending for the comparatively long continuance until the nesting-season, upon incidences of weather. In this way pairs may be broken up more than once before then, and mating have to be renewed. A great deal of the success attending partridge-preserving depends upon these matters, which have in the not very remote past been mis-stated or misunderstood. I shall, however, deal with these points presently, as they do not occur in seasons of fairly normal description with sufficient force and in such universal manner as to affect the ordinary natural history of the bird which is at present being dealt with. Of course, under nearly all conditions the mating is later in the rougher, less protected parts, the nesting season being correspondingly less early.

Partridges, unlike pheasants, are strictly monogamous, the hen forming the nest and incubating under close attention by the male. The nest-making is a by no means lengthy or elaborate proceeding, the chief cause of anxiety seeming to be the choice of site, and the birds will often search for weeks before selecting one possessing all the necessary qualifications. The nest itself is a very simple affair, and consists of a plain hollow scratched and formed under some shelter. It is adorned with a certain amount of lining, which may consist of dead leaves and grass, bits of fern and straw or the like. The site chosen varies considerably, but always exhibits certain characteristics. When situated in grass, clover, or corn-fields, it is invariably beneath some specially thick tuft of growth, and at a spot slightly elevated above the surrounding parts. It may be at the foot of a tree, or a bush, or a post, in the rough weedy growth in the angles of the field, or beneath

the hedgerow. Sometimes it is in a spinney, or the broken ground and low covert beside a field, or just within a plantation, or on a moor—if so, not far from a damp place or mire. Occasionally, also, very eccentric spots are chosen. The eggs vary greatly in number, up to twenty-two, but the average is probably about fourteen. Incubation requires twenty-four days, during which time the male keeps vigilant watch, but never assists in the sitting, although doing the most he can to protect the nest.

As soon as the young are hatched, or within a few hours, they are ready to move out. This will be from the middle of June to the commencement of July, but the hatching-time with partridges varies so very much, consequent on the nature of the season, locality, &c., coincident with the final mating, that it is difficult to lay down a hard and fast line as to the time. Immediately the young move out, the old male bird commences to take his share in the protection and feeding of the youngsters. The partridge is naturally a hardy bird, and the percentage of birds reared to eggs must be large. It suffers mainly from wet weather at brooding- and hatching-time. The partridge and its young roost on the ground in similar spots to those where they nest. The young repose beneath both the paternal and maternal wing until too large, when they pass the night in a bunch, heads pointing outwards.

The birds begin to move early in the morning, when the sun rises, and start to feed. Their food is multifarious, varying according to the season. During spring and early summer it consists of blades of grass, &c., all sorts of seeds, chiefly of those plants coming under the denomination of weeds. In addition to this form of food, the birds subsist to a very great extent on insects of many kinds and in various states, preferring, however, ants, wireworms, and members of the aphid family; they also

like spiders and slugs. In late summer and autumn corn is also eaten by the partridge, but it rarely pulls an ear of corn down which is not within its reach, so that during the time our cereal crops are ripening the partridge, although a constant frequenter of the fields, does no damage to the grain. Its express aim in being there is to feed upon the thousands of insects always present and upon the seeds of the many weeds now ripening; but, of course, if there be any ears of grain within reach it soon empties them. It is after the corn is cut, however, that the partridge consumes most grain, for it lies, some in the few fallen ears and some shaken out on the ground, the food for any bird that likes to consume it.

As soon as feeding is completed, the birds repair to some particular place to pass the day. In winter this is generally some grass field or low brake where they find good shelter and warmth, but it often occurs that food is so scarce or so difficult to obtain, that they may pass the whole day before obtaining sufficient to make a meal. During the remainder of the year and according to the particular part of the season, clover, potato, or turnip fields, short gorse, or broom covers, or the edge of the moor if it be near, and last but not least the stubbles, are all acceptable as midday retreats. Towards evening the birds again go on the feed, and generally make their "squat" for the night about sundown, when they "jug" or "juck," the technical word for the cry they make at this time. The brood and the old birds remain always together until the next mating-time, when the covey breaks up and the pairing begins. Sometimes two or more coveys will join together and so remain in peaceful unison, and at the end of the season they "pack" like grouse, forming into, comparatively speaking, large flocks.

Hen partridges, probably more than any other game-

birds, are in the habit of using one nest for two birds, the progeny being sometimes divided into two broods, but in most cases such clutches pass into the care of one pair of old birds.

The partridge is extremely neat and careful in its habits and attentive to its appearance. A considerable time each day is devoted to dusting and cleaning the feathers. The site chosen is generally a sunny bank, but often a road. If the former it is used for some time, and the spots to which the birds resort for this purpose are easily distinguished by the foot-marks, termed "roads," on the fine dust produced.

The partridge has several cries which are easily caught by the practised ear and known to denote certain proceedings by those possessed of sufficient acumen to discover them. The call and answer of the birds at mating-time, and the evening "jucking" of the coveys, should be well enough known.

It has come to be recognised of late years that there exists in some portions of the kingdom a rather pronounced variety of the Common Partridge which may be classed under the title of the Moorland or Mountain Partridge. As a rule the individual birds as well as the coveys run smaller, the birds are of a lighter, sandier colour, and are imbued with a locally migratory instinct which prompts them to long flights at certain seasons. The result is that at times coveys of these partridges appear on lands far from their proper habitat and disappear again in a like manner. Incidentally, I may remark that the same variety of partridge exists in large quantities in Hungary, which may account for the rapid disappearance at times of these birds when turned down. As far, however, as I can state with certainty, it is to be noted that these smaller mountain or moorland birds mate exclusively amongst themselves.

Of the Red-legged Partridge it is difficult to speak without running contrary to rather pointed opinions held in many quarters. As far, however, as their general habits go, they differ immaterially from the ordinary bird. Their mating-time and practices are the same, but they nest in quite different manner, the eggs being deposited at odd times over a lengthened period, one or two being laid, and sometimes no more dropped for a week or ten days, and the remainder in desultory fashion. The birds prefer, as a rule, rougher and less cultivated ground—commons, short coppice, and the like—for nesting places. They choose, moreover, higher ground for the purpose, are hardier, and suffer far less from wet seasons. They pack more readily towards the close of the season, and speaking from the point of shooting over dogs, are decidedly inferior birds, by reason of their running powers and propensities.

At the same time, none but those of ultra-conservative taste and prejudice should object to the French Partridge. It is a strong, healthy, hardy bird, whose defects have been largely exaggerated, notably the one which is laid to its discredit of causing the ordinary partridge to die out wherever "Red-legs" become established. It is very probable that many of the merits of this game-bird have been severely and unjustifiably overlooked.

As in the case of the pheasants, the Hon. Walter Rothschild suggests that there are several species that with advantage might be acclimatised. First on the list are the Snow Partridges (*Tetrao gallus*), two other species of Red-Legged Partridges (*C. saxatilis* and *C. melanocephala*), the Bearded Partridge (*Perdix daurica*), the common Francolin or Black Partridge (*Francolinus francolinus*), two species of Sand Partridge (*Ammoperdix bonhami* and *A. neyi*), &c.

CHAPTER XIV.

THE PARTRIDGE: Higher Preservation.

PRECISELY as was the case with pheasants, it is necessary nowadays to distinguish between the ordinary system of preservation extended to the partridge and what I have termed the higher system. In fact, of late years there have been some remarkable developments in the latter direction applied to almost purely partridge estates, so widely different from the ordinary run of affairs that it will be necessary to devote quite special attention to these features of the business. The conditions, moreover, which surround and permit them are such as to be really exceptional compared with the average run of partridge-preserves, so that I think it will serve a better purpose to ignore them for the time being, because they would scarcely appeal to and would certainly not affect the average preserver. It will also be best to reserve any pointed reference to the Hungarian birds until the opportunity arrives to deal with that matter in detail. I shall therefore confine myself, in the first instance, to the means available to and the methods by which the ordinary preserver may work up a head of partridges and maintain them upon his manor.

The partridge is so ubiquitous that it would be difficult to find any large expanse of these islands, except we go to the most northern portions, where it is not present. Consequently the introduction of these game-birds on

lands where they have hitherto not been preserved in some mode or other, nor were present, is an operation seldom necessary. The first matter for consideration is, naturally, the aspect of the country, and, unless that be suitable, it will be found impossible to introduce partridges. As a rule, exceptions to which do not often occur, it may be said that where partridges already are, they may be increased, and an occasional covey or two in a given locality may always be taken as a proof that it is a suitable one whereon to attempt their increase. This may consist very well in turning away a number of couples of birds in the early spring about mating-time, say the months of February and March. Indigenous partridges may be obtained almost anywhere, and at a reasonable figure, and the only point in their selection which requires observing is to obtain birds from localities possessing similar, but not necessarily identical, features with the district in which it is purposed to introduce them. When turning the birds down, the best plan is to place two or three pairs within a short distance of one another, so that the usual calling for mates and jealousies of the males over their chosen hens may be duly gone through. The best spot to put down partridges in spring is in a dry, rough pasture, more particularly if there be a small expanse of low uneven brake adjacent. Put them down towards night-time, as they will then have no disposition to fly off, and after a night's rest will probably settle down and stick to the near neighbourhood of their first resting-place. For the first day or two a little grain—oats, barley, or wheat—scattered about may help them along, but it should be given in but small quantities, and for but one or two days, as it is almost unnecessary to remark that favourable open weather must be chosen as the time for the purpose.

In such case, where Hungarian birds are employed, the mode of dealing with them is somewhat different, and will be described later on.

The introduction of partridges may furthermore be made by acquiring eggs and hatching them out under hens. From a pecuniary point of view this is usually the most satisfactory mode, while the successful rearing of some few dozen of young birds would provide a nucleus of a future large stock. It is, however, a process involving a considerable amount of trouble, but the ordinary preserver has his keepers and can breed the birds fairly easily, and rear them with ordinary attention. Some keepers seem to consider the hand-rearing of partridges rather beneath them, and fight shy of anything short of pheasants.

Of course, partridge-rearing is rarely as extensive a business as the production of a stock of pheasants, except upon the big preserves to which reference has been made. There is this, moreover, to be remembered, that once a fairly good stock of partridges has been worked up, they will, unless under the effect of bad seasons, maintain themselves at such level without any great extraneous assistance, whereas with pheasants the circumstances are different, and each recurring year must witness repetition of the same scheme of hand-rearing, &c., if the same quantity of birds is looked for. For this reason, the arrangements for the hand-rearing of partridges never require to be on the same scale as those for the more aristocratic game-bird. The hand-rearing of partridges may be undertaken by the large preserver or the owner of quite a small shoot. In either case, all the appliances for the annual pheasant-breeding on hand can be utilised, if available, or may be supplemented to meet the increased requirements.

The first step is the acquisition of eggs. These may be

bought from a recognised reliable source, arranged for with the neighbouring preservers—not their keepers, be it remarked—or taken from the nests on the place. Like the pheasant, the partridge invariably hatches out more birds than it rears. The percentage of birds to eggs depends mainly upon the season. The remainder die off from various causes, rarely purely natural ones. Consequently, if at nesting-time the partridge nests are sought out and relieved of any superabundant eggs, those left stand a much better chance of producing full-grown partridges eventually, and the hen bird can expend all her maternal energies on the less numerous progeny. At nesting-time a thorough keeper and an observant farmer always know where the nests are. Consequently, a daily round to collect from all *unset* nests the eggs in excess of ten or fifteen, according to the season, will be an easy matter, and result in providing a good store of eggs for setting under hens. The hens should be of a similar type to those that hatch out the pheasant eggs. From fifteen to nineteen eggs may be put under one hen, but I think seventeen preferable. The hens are best set in nesting-boxes out of doors, and the treatment up to hatching-time is the same as with pheasants, but the subsequent course of operations varies somewhat. It is highly important that the eggs should be thoroughly aired every day, and a sprinkling of water as applied to pheasants' eggs is necessary, more particularly from the eighteenth day of incubation onwards.

As soon as hatched the young partridges are placed in the rearing-coops, and treated in the same way as pheasants, with the exception that their food must consist more of an insect character if possible than in the case of the latter. Of course, the natural article in the shape of the eggs of the small yellow meadow-ant is much to be

preferred; but in view of the fact that if hand-reared partridge chicks be given ants' eggs mainly from the start, they may reject their other food offered them at a later date, it is necessary to commence with a mixture of the insect food—if available—and such other as may be determined upon. This may take the form partly of the custard already described, and either lettuce, chickweed, or groundsel, chopped finely, the unripe seed of the plaintain, rice broken small and lightly boiled, and very small quantities of any small bird seeds. The best way is to make a thin custard—with fewer eggs, that is—and add the other food and ants' eggs in equal proportions until it is fairly dry, and of about the consistence of fresh bread-crumbs. Any one or two of the green foods will suffice, and in the absence of the insect food Spratt's "Crissel" or good desiccated meat, ground or pounded very small, will prove very good substitutes. The food formula for young partridges for the first week stands as follows:—

(1) Ants' eggs or desiccated meat ...	8	parts.
Thin custard	16	„
Green food	12	„
Millet seed	8	„
Canary-seed	8	„
Linseed or rapeseed	8	„
Boiled rice	4	„
	<u>64</u>	<u>parts.</u>

For the first week or ten days the young chicks require feeding every three hours, commencing an hour after daylight and finishing an hour before sundown. This will give five feeds a day to commence with, to be reduced to four, and eventually to three when the birds are three weeks to a month old.

At from a fortnight to three weeks the food may be varied, and thence onward until they are two months old the following diet may be given in place of the above, the custard being gradually dispensed with:—

(2) Desiccated meat	8	parts.
Green food	12	„
Millet or dari	16	„
Canary-seed	12	„
Hempseed	4	„
Linseed or rapeseed	2	„
Crushed blue peas (fine)	2	„
Crushed maize (fine)	8	„
	<u>64</u>	parts.

Where any number of partridges is sought to be reared, it is better on the whole to rely chiefly upon the partridge meal specially prepared by trustworthy manufacturers of such articles. In this case, the custard and the green food would be added to the meal in such proportions as are requisite. The food of young partridges should be varied as much as possible day by day, but if they always have a few insects and plenty of green stuff, the choice of food may be left to the preserver. It is a mistake to place young partridges on a grain diet too soon. In a natural state they scarcely touch any at all until two or three months old, and it certainly cannot be beneficial to force them to the consumption of dry wheat, barley, or oats before they are prepared for it.

An important part of the hand-rearing of partridges is that the coops and runs confining the chicks be moved twice daily on to fresh ground. This is a most necessary proceeding, for although somewhat less liable than pheasants to the many little ills which attack coop-reared

youngsters, they have not their hardihood, or, rather, do not lend themselves so easily to an artificial life, and are consequently less easily reared. Gapes, roup, catarrh, and cramp are the maladies most affecting them. The means of prevention, and the steps necessary to be taken to effect a cure, are the same as with pheasants, as is, indeed, every portion of the process of hand-rearing not entered into here. The business is so similar that it would be superfluous to give a separate explanation for each.

As soon as the young partridges are half-grown, which is determined by a full development of the feathers and a general sturdiness of body, the coops must be removed with their broods of hens and chicks to the edge of a corn-field, and placed in a dry spot—just within the wheat or oats is to be preferred—and the young birds be given their liberty, the hens alone being confined. For a few days the partridges will remain about the coop, and perhaps nestle beneath their foster-mother's sheltering feathers, but probably before a week is out they will have thrown off all trammels of domestication and dependence, and struck out a course of life on their own account, when they may be left to take their chance. Young partridges should only be turned out in fields which are reasonably secure from vermin. There is no doubt that, looking at matters from this point of view, oat-fields are the most suitable rearing-grounds for the young birds, as they offer far more cover and security from winged vermin and more opposition to the progress of ground vermin than wheat-fields. The same may be said of barley, but I prefer wheat or oats. Another consideration is not to put the broods down sufficiently near to run into one another, otherwise they will pack to some extent, and very large coveys will be the undesirable result. One brood to every two acres is a sufficiently thick stock.

Once turned away, young partridges require no more looking after beyond the usual attention from the keeper, but he ought to watch, without necessarily disturbing each brood turned down, until the birds become too large for regular watching. While the meadows and hayfields are being mown, whether by machine or the scythe, the keeper, or someone that may be trusted, should be present, attendant either on the mowers or following the machine, with a view to the discovery of any hard-set nests beyond those of which he should already possess full cognizance and have marked out for avoidance and non-disturbance. Not infrequently, however, nests will be so disturbed that the hen bird deserts them, or are considered so certain to be so treated that it is the best course to transfer them to a nesting-box, and leave the further process of incubation to a foster-hen. Provision must, of course, be made for anything of the kind, so that the clutches which the partridges would otherwise desert may be quickly brought in and placed under the fowls. By carrying this practice out systematically, a large number of nests will, in general, be saved, and particularly on extensive partridge shootings; the eggs will be hatched off, and even if only fifty per cent. of these be brought in they will result in full-grown birds eventually, and the small amount of trouble will be repaid.

This brings us to a point beyond which it is not necessary to go in regard to the hand-rearing of partridges on an ordinary shoot where these game-birds are held secondary in importance to pheasants. Before dealing with essentially partridge manors, there are other matters which must claim attention, and may better be dealt with here.

Not many partridges die during an ordinary winter from exposure and disease, and very few from hunger; they

always manage to pick up enough to evade starvation. But when a long spell of wet, frost, or snow comes, food proves scarce for several days in succession, and the poor birds are at their wits' end for a sufficiency of nourishment and warmth, particularly the former, and their condition may sometimes become so low that death must supervene. It, therefore, behoves every preserver to take the necessary steps for providing food for the game-birds he has brought together on his estate. It may be considered a duty of every preserver to provide food for partridges in times when the earth is bound up with frost and snow. In a subsequent chapter the question will receive further consideration.

Disease sometimes makes its appearance among the partridges, particularly in wet seasons, when they suffer considerably. Tapeworm will affect them and kill off a small percentage, and the presence of this animal within the body quickly reduces the birds to very poor condition, so much so as to render them unfit for table purposes.

Another disease which, seemingly, hand-reared partridges alone suffer from is roup. It is evidently a different form of that malady from the one which attacks the broods of young pheasants, as young partridges still under coop rarely suffer from it, and scarcely ever die in consequence. On the other hand, fully matured birds acquire it, and oftentimes die off by dozens. The most noteworthy symptom is the presence of large swellings on each side of the head, sufficiently prominent to be noticeable during the flight of a covey or individual members of it. Wet seasons serve to account for it. The naturally-reared birds escape its ravages, simply because they are wild birds, whereas, on the other hand, those reared under a barn-door fowl and in a coop do not possess

the natural strength of constitution and peculiarity of habit which enable their less pampered congeners either to escape the malady or to withstand its attack.

Another cause of loss among the ranks of the "nut-browns" is one which must call up a sympathetic feeling in the breasts of sportsmen—namely, the formation of clay balls upon the feet of young partridges present upon lands of a clayey nature. In damp weather the soil clogs on the little birds' feet, often to such an extent as to render movement impossible, when they must needs lag behind the brood, drop down, and die of exhaustion or starvation, or from both combined. Nothing can be done for it beyond watching the coveys closely, and driving them some little distance carefully; any encumbered chicks will soon be noticed, when they can often be caught and relieved.



CHAPTER XV.

PARTRIDGES: Hungarian Birds.—The Continental System.

IT is, comparatively speaking, only of recent years that partridge-preservation upon a more extended scale, and in a kindred manner to pheasant-preservation, has been adopted upon many of those larger estates which have established a record and furnished a model to many of less extent. Two or three causes have contributed to the change of practice. In the first place, driving, for one or more reasons, has almost entirely superseded shooting over dogs, and it naturally follows that where the sport is quicker and more concentrated, as it is when birds are driven, a greater quantity of quarry is required to make it more than a passing incident, as it would be if old methods were relied upon. It is not, however, given to more than a few to discard them, and what is, after all, the everyday practice of the great bulk of preservers could not be entirely ignored. At the same time, the newer and more successful methods must slowly become almost general upon any shootings laying claim to up-to-date methods.

Then, again, we have for more than a decade suffered severely from recurring bad partridge seasons—so much so that, commencing with the importation of Hungarian and other foreign-bred partridges, various remedies have been sought for recouping past losses, and for increasing the stock of birds, so as to bring partridge manors proper up to latter-day requirements. Following upon the mere

importation of foreign birds—at most a costly and only partly-profitable procedure—we have had the adoption by preservers of what is known as the French—it ought to be Continental—system of partridge-rearing, and its adaptation to British requirements, upon lines which have improved and benefited it. The establishment of partridge sanctuaries is another comparatively new feature of the higher preservation upon large estates, so that, altogether, partridge-preservation, in England especially, may be said to have taken quite a new departure with the arrival of the twentieth century.

Inasmuch as the importation of Hungarian birds may be regarded as appealing to the great majority of preservers, it is advisable to refer to this traffic and its influence and utility in regard to partridge-preservation in the first instance. In doing so it is necessary to point out that there are several features in connection with this matter which do not altogether lend themselves to approval, and that it is just as necessary to exercise the closest care in obtaining them as in dealing with all other supplies of game-birds or eggs. To put it plainly, Hungarian Partridges, so-called, are not always entitled to be so described, and even if they be of Hungarian origin, they may not always be of the kind suitable to British preserves. Hungary is, to say the least, an elastic expression, and the partridges coming from that country may easily be of a character quite unfitted for profitable use in our preserves. The districts where they are obtained, the manner and time of their being taken, and the kind of bird secured may, as a matter of fact, entirely unfit them for employment for the purpose for which they are chiefly intended in these islands. Far more than anywhere else in mid-eastern Europe are the partridges of the Hungarian plains and mountain slopes endowed with the migratory instinct.

Their inborn, ingrained habits are such as quite to unfit them for establishment upon our preserves, and there is certainly a very large percentage of the truly Hungarian birds which are brought over here quite unsuited for turning away in this country. Then, again, birds are brought over here from Bohemia, other parts of Austria, and Germany which have no right to be classed in the same category; so that, altogether, whatever measure of success may have followed upon—and no doubt has followed upon—their introduction and employment. has been due not to the intrinsically meritorious lines upon which the traffic has been conducted, but rather to the good fortune which has attended some of those who have embarked in this direction. The probability is that not one-tenth of all the Hungarian and allied partridges put down in this country have survived to exercise any material benefit upon the home stock. That there are legitimate sources of valuable supply there is no doubt, and if they can be tapped with certainty it is equally indubitable that the influence of birds from them when turned down is entirely beneficial. Whether, however, it is an economically sound policy remains to be seen.

It thus follows that any preserver determining to turn away Hungarian Partridges must, in the first instance, satisfy himself as to the source of his birds, and the nature of them. It is quite easy to obtain birds of the right sort from trustworthy firms. By the right sort is implied birds of similar stamp and race to our own, of thoroughly healthy stock. That birds commanding these qualifications will be hardy is assured, and that they should prove prolific there is no valid reason for doubting. True Hungarian birds should be available for delivery here in England in November and the first portion of December, or even during all December. They will then, in all

probability, be freshly-caught birds, in the best of condition, and come as straight from their place of origin as is possible under the circumstances. The fact that they may arrive to cold weather here does not influence the matter, as the foreign birds would, under natural conditions in their own country, come into much greater cold about the same time than they would be exposed to in this one. It is unnecessary to detail the reasons why Hungarian birds should not be obtained at a later date; sufficient to state that December is the latest time of the partridge season when they should be on hand here.

If the birds arrive upon the preserve late in the day or at night-time, they should be allowed to remain quietly and undisturbed in the hampers until next day. The hampers should be placed out of doors, or in an open shed, but in such position that they may not be exposed to draughts. In any case, do not interfere with them till daylight. Then they must be placed in pens. Provision in this respect must be made beforehand. The pens necessary for the purpose must be movable ones, and as large as possible, say 12ft. long by 4ft. wide, and 3ft. 6in. high. They must be boarded up along the sides and ends to about half their height, and covered otherwise with twine netting of about $\frac{1}{2}$ in. to $\frac{3}{4}$ in. mesh. Wire netting is quite unsuitable for the purpose, as the birds are sure to injure themselves against it when first released. Three or four pairs are sufficient to place in each pen of the size named, and it will be found better to duplicate the pens than to increase the size of them and the number placed in them.

As soon as the birds are released, water and flint grit should be provided them, and if the pens be upon turf as they should be, the partridges will soon commence to feed from the grass, as green food is more essential to them

at first than grain. Do not allow the birds to drink excessively if they show a disposition to do so, and give them a first meal of broken wheat, dari, and crushed maize in equal proportions, to which a little canary-seed and some finely-chopped greaves have been added. Thoroughly scald the food before giving it, but give it cold and moderately dry. This food should be continued for two or three days, and should serve the purpose of thoroughly setting up the birds after their long and exhausting journey. As soon as it is assured that they are picking up, the necessity for scalding the food and crushing it no longer exists, and they may be given whole grain consisting of wheat and buckwheat, dari, very little small or crushed maize, but some sort of green food must be provided, and a cut swede or kohlrabi given them to peck at. When fit and ready to be released, the pens, if not already there, must be removed to the place where the turning away is to take place, and where also they may be left for a night or two. If there be any native birds handy, they will be attracted by the strangers, and be furthermore encouraged to frequent the spots by having similar feed put down for them to the penned birds. When the latter are released, let them out a pair at a time from each pen upon consecutive days, and continue to feed a little outside the pens. If the directions given have been followed, the birds are more likely to remain about the neighbourhood where they have been released than to stray far afield. Then, if the birds be of the right sort, they will speedily fraternise with the local birds, and success will attend the operation.

In cases where it is not considered necessary, or may not be convenient, to provide pens for the Hungarian birds, they may be liberated straight away from the hampers in which they arrive. As a rule, the hampers which

contain them are covered on top with canvas. An opening large enough to permit a single bird to come out is provided, and the partridges are then best left by themselves to find their way out. Water, &c., with food as described, being placed within easy access near the hamper, the birds soon discover this for themselves, and will, without going to any great distance, make their way about, and, so to speak, find a footing upon the place. It is to be remarked, however, that they certainly do better when placed in the pens at first, a larger percentage of birds turned out from the hampers direct tending to stray far afield, whilst those which have suffered most from the long journey have less chance of recovering themselves.

Once more let it be remembered that Hungarian, &c., partridges should always be turned away in the morning and never at night, a fact which has more to do with successful results in this business than almost anything else, although I have frequently noted the reverse practice is recommended.

It is frequently claimed by those having to do with them that they can easily distinguish the Hungarian birds from the others, but I am perfectly convinced that—if the right sort of birds has been put down—once the two sorts have properly commingled, this is quite impossible unless some special mark be put upon them. This marking may be carried out in one or two ways, but the least desirable of all is the placing of rings upon the birds' legs. For the purpose of identifying the birds alive there is no better way than to cut the tails squarely across. This mark will make itself abundantly apparent all through their first season, for whether on the nest or in flight the imported birds so treated show up quite distinctively against any others. In order to identify the birds when dead, or in a second season, a small punch, such as is used

for ear-marking sheep, but lighter and smaller, should be employed, and a small hole punched through the web of one wing. This is easily done if two persons assist at the operation, and, beyond a little stiffness, causes little or no inconvenience or pain to the bird operated upon. The mark left is sufficiently distinctive, and can be varied in its position on the web or the right or left wing according to circumstances which may influence the case, such as the beat upon which the birds are turned down, or whether neighbouring preservers are pursuing a similar policy or not and it is desired to mark both lots of birds but in a different manner.

Let us now consider what rôle these imported birds may be made to play upon British preserves. In the first instance, there is the fact of the infusion of an entirely new strain of blood. The effect of this upon an exhausted or stale stock must always be very marked; but unless the proper steps be taken to see that the imported birds do not mate with one another in the first season, little effect will be apparent until the second, and then probably to a reduced extent. It will be found that it is more effective at times to turn away about twenty-five per cent. more hens than cocks, and by not killing off the cock birds of the indigenous stock quite so closely as is usual a more extensive and effective mingling of blood is obtained the first season than would otherwise be the case.

Other circumstances which make the turning away of Hungarian Partridges a valuable procedure are those which arise during or following very bad partridge years, such as was, for instance, the case in 1903 over a widespread district of England. In this instance the great destruction was amongst the young birds, although many old birds fell victims to the visitation. In cases such as this, local or general, the turning down of Hungarian birds in

sufficient quantities is calculated to rehabilitate the preserve largely by the next season, and probably a better effect is produced than if native birds were obtained and put down, or attempts were spasmodically made to achieve the same result by hand-rearing or by making an effort upon the lines of the Continental system of partridge-raising—an important subject which must now command attention.

In dealing with what is known as the French or Continental system of partridge-rearing, it is necessary to point out that the original system has been very largely modified and altered. At the same time the principle remains largely the same. If, therefore, it be succinctly described as in its mainly original form it will serve as a basis upon which to found adaptations of it to British requirements—adaptations, moreover, which have served to increase the effectiveness and usefulness of the original plan.

The main object of the system is to increase the possibilities for successfully hand-rearing partridges, and at the same time to maintain the parent birds under conditions calculated, with ordinarily good fortune, to ensure prolific mating. Under this system, too, effort is made to imitate natural surroundings and habits as much as possible. To this end, numbers of pairs of birds are confined in a combination of pens, placed in such a situation upon the preserve as shall ensure an abundance of cover of the description affected by partridges such as one finds in the rougher districts. The arrangement consists of one main pen or aviary, circular in form, and calculated to accommodate from, say, twenty to a hundred birds, according to the circumstances influencing this point. Substantially constructed of fine-mesh wire netting, set up on standards about 9ft. high, and covered with small bird-proof twine netting, supported where necessary, this

structure provides a main aviary of, as mentioned, circular form, into which the birds are turned after having been caught up. It is found advisable to avoid sharp corners when erecting these aviaries, as the birds, when first turned in, are prone to injure themselves in squarely-built ones (Fig. 23).

The site chosen for one of these structures should be a dry one, and not too exposed ; in fact, a good deal of any

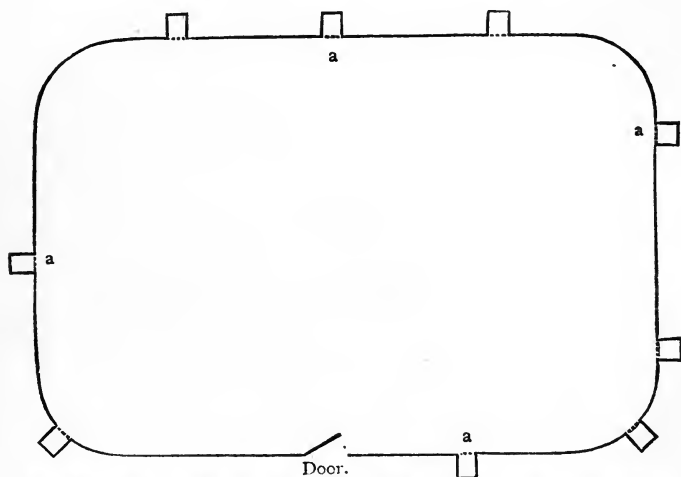


Fig. 23.—Plan of Enclosure for Partridge Rearing in the Continental System—a a a, Side Pens.

success achieved will be largely attendant on the suitability of the position chosen. A partridge aviary of this kind must be placed amongst cover of what may be described as rough scrub. In fact, nothing would suit better than a site within a young mixed plantation of firs, oaks, hazel, and the like, the saplings of which have not yet reached a greater height than 5ft. to 6ft., and are not more closely planted than from 6ft. to 9ft. from one

another. It is not only necessary that the aviary should contain some such cover within its limits, but it should also be surrounded to some extent with similar growth, reaching to some not inconsiderable distance from the aviary upon all sides. The object of having the enclosure so provided will be evident.

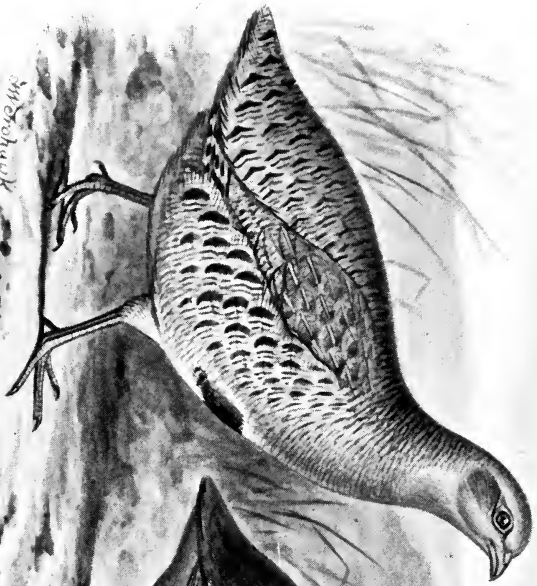
According to the dimensions decided upon for the main enclosure, one or more working doors must be provided, and if it be considered necessary in any way, it should furthermore be furnished with an 18in. high border of galvanised sheet-iron, banked up on the inside with turfs carrying a good rough growth. If, however, the conditions be such that this protection against undue fright by poaching dogs or foxes may be dispensed with, all the better.

At intervals round the main enclosure movable pens should be placed, adjusted to corresponding openings (which may be closed by sliding doors) in the sides of the former. These pens should be not less than 4ft. wide by 9ft. long, and about 4ft. high, and are intended for the use of sitting birds, and should also be provided with a hinged door at the outer end. The position and number of these sitting-pens may be regulated according to the natural cover which they may be made to contain and the quantity of birds put down in the main enclosure.

Towards the close of the autumn, in October or November, a sufficient quantity of partridges, in equal numbers of cock and hen birds, are turned into the main enclosure, the smaller pens being meanwhile shut off. It is probably preferable to add one or two odd cock birds to the stock turned away. These confined birds are carefully fed and looked after during the winter months, and gradually accustomed to the conditions of semi-domestication under which they are confined, and also to the movements of the keepers who have charge of them. Judiciously

COMMON PARTRIDGE

(PERDIX CINEREA).



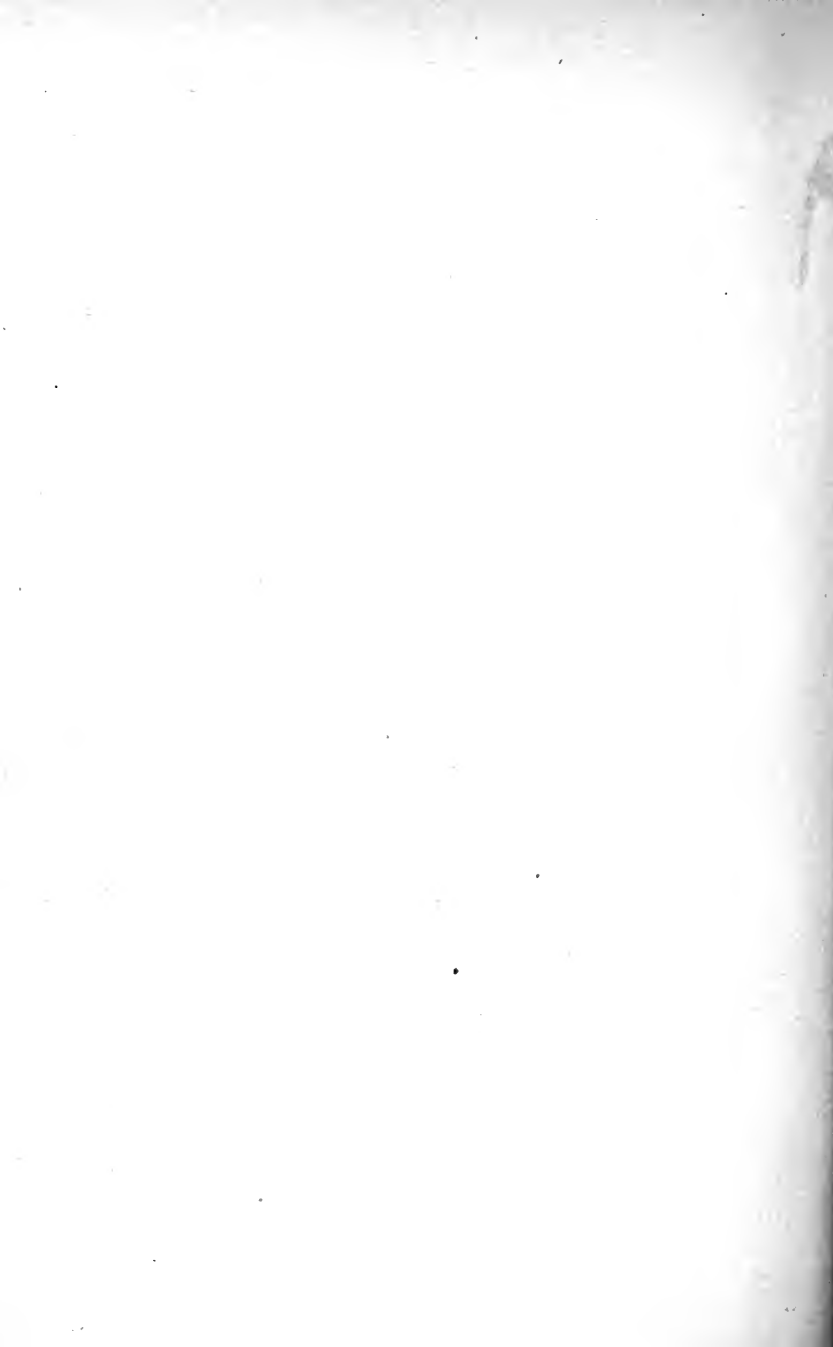
W. Chubbuck

RED-LEGGED OR FRENCH PARTRIDGE

(CACCABIS RUFA).



The distinctive appearance of these two Game-birds is clearly shown. Hungarian Partridges are of the former type.



handled, the birds soon become less fearsome and more reconciled to their peculiar surroundings, and learn to know those who feed and attend to them. It is necessary, however, that the birds should be fully protected from disturbance and fright from vermin and possible intruders. The novelty of the system excites interest, and unauthorised persons and visitors are very prone to seek close acquaintance with what is going on, a fact which should be carefully guarded against.

As soon as it is evident that the birds have thoroughly settled down and become accustomed to the moderate confinement imposed upon them, access may be offered them to the smaller pens ; but this must not be done at too early a stage, otherwise they never seem to settle down properly. From the time they are turned in, the birds must be regularly and properly fed with suitable grain, and be supplied with the necessary drinking-water. Corn in the straw may be provided for them, and loose grain scattered about the pen. With but ordinary attention they then do well throughout the winter months. As soon as the mating season approaches, which in the case of partridges thus handled comes earlier as a rule than with wild birds, or, at any rate, is not interrupted so severely by spells of bad weather, the birds begin their mating, exactly as do those in a free and untrammelled state. As soon as the fact becomes evident, it will be necessary to catch up any unpaired birds and turn them adrift, or to try them in separate and smaller pens.

It is now that the advantages of this system first become apparent, because before the actual nesting commences amongst the birds the majority of the hens will drop eggs promiscuously about the enclosure. Some of them also will lay to the same nest, or rather laying-place, and altogether the birds are found to lay much more freely than

in a state of nature. The state of semi-domestication evidently influences the partridges in a favourable direction in this respect. Thus, a number of eggs, of quite considerable importance, may be picked up in the main and side pens, whilst as soon as the birds commence laying to a separate nest, after a certain number of eggs has been produced, from six to ten may be withdrawn from each nest without any effect upon the laying bird or any diminution of her eventual brood, exactly almost as is the case with pheasants, only to less extent. In this way the clutches may be regulated so as to ensure more regularly numbered broods of greater *average* size than is usually the case with wild birds. The result in this respect from this system is a net gain of from thirty per cent. to fifty per cent. in eggs over what would be obtained from wild birds; whilst the losses which would subsequently occur under ordinary systems of hand-rearing are greatly reduced.

Directly the confined partridges seriously begin their nesting, the majority of the birds find their way to the side pens for the purpose of brooding. As soon as this occurs, the individual pairs are shut off in the small pens which they take to themselves, and here they remain until the eggs are hatched out, being duly fed and watered during the time. Not all the pairs will choose or find accommodation in the small pens; some will brood in the larger enclosure. It will, however, be found as a rule that the small ones generally command occupation in the first instance, and that the large enclosure offers ample accommodation for the remainder if only the minimum amount of space mentioned as necessary for each pair of birds be provided.

As soon as the broods commence to hatch out, one of two courses is pursued—either the birds are left for from twenty-four to fifty-six hours in the pens as they stand, and

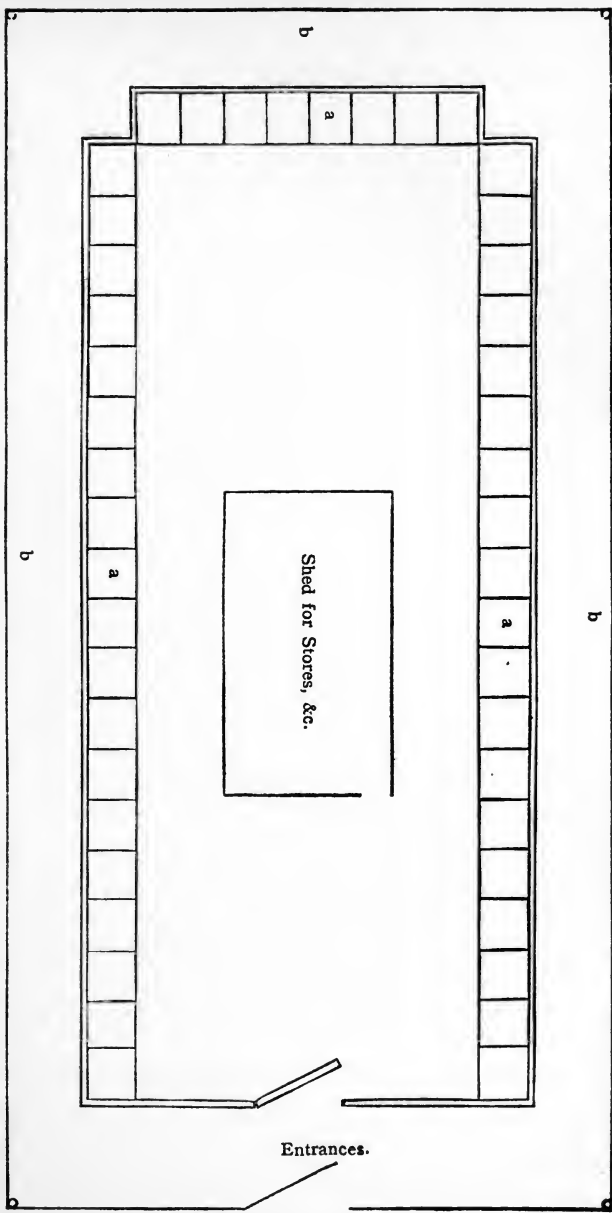
then given their liberty, or the pens are removed with the broods to such rearing-places as may be decided upon. The former practice possesses the advantage in some respects, but it is not always convenient or advisable to give so many broods their liberty at one centre, and distribution of them over the manor is inevitable. Where the latter course is necessary, the old birds must be caught up at night in small flat baskets with side doors, specially provided for the purpose. Round ones are best, about 18in. diameter, 6in. high, and fitted or lined with a canvas bottom. The pair of old birds are placed in the basket, and the chicks in a carrying-box, as described for pheasants. The pens having been carried to their new position, the basket with the old birds is placed within it, and the chicks are carefully introduced. The door is then left open, and the old birds and brood will be found settled down again when next morning arrives. Some suitable meal should be thrown down for the young chicks, and food and water provided for the parent birds. Discretion should be exercised as to when the birds are given full liberty after removal to their new quarters, according to how the parent birds show themselves, the class of ground they are placed upon, and, consequently, the amount of natural food available. In any case the fourth day will be quite long enough to keep them confined, and either upon the morning of that day or sooner the pen should be opened and the birds invited to take their liberty. It may be, but is not very likely, that they may return for one or two nights to the pen, but there is nothing gained by leaving it for them after once it is opened. Practically the same course of procedure applies to the pens when left alongside the main enclosure, and as soon as the first of the nests which are being brooded within the latter is hatched off, one or more of the openings about

the enclosure may be left open during the day-time, so that the parent birds may lead out their broods when so inclined.

Once the birds with their youngsters leave the enclosure, they require no further attention than is accorded to wild-brooded birds, except that at first it may be advisable to provide a small supply of suitable food in such places where they are likely to discover it. It will thus be seen that, whatever the conditions under which the birds are hatched out, they are reared under purely natural ones. The birds thus hatched prove as hardy and as good before the guns as any others, the percentage of birds hatched is larger than with the wild ones, and they exhibit none of that tendency to "pack" which is so marked a feature of partridges hand-reared in the ordinary manner. Of course the surplus eggs collected have to be dealt with under the latter conditions; but, as will be shown presently, there are means available for successfully combating this difficulty.

There is an alternative plan, which has much to recommend it in the case of preserves not offering the conditions of site mentioned in the foregoing, and where, for reasons of one kind or another, it is not possible to spread the birds about in the big coops. In this instance a large enclosure of quadrangle form is provided (Fig. 24), having at two or more of its corners smaller pens, 12ft. by 6ft. wide, and 4ft. to 6ft. high, with a hinged door on the inner side. These smaller pens must be shielded from the main enclosure by walls of sods of turf, bracken, or rough litter, to 3ft. or 4ft. high, as must be also the case with the walls of the large enclosure, unless it be set up amongst such thick, low cover as I have described. In such case the birds will require pinioning with the leather and rubber clips which are manufactured for the purpose.

Fig. 24.—Plan showing arrangement of series of Partridge Pens. a a a, Pens ; b b b, Outer Fox-proof Fence.



In addition to this enclosure it will be necessary to erect a series of small hatching-pens, 14ft. by 9ft., formed of sod walls, something upon the plan shown at Fig. 24. The idea worked out under this scheme is that as the birds pair they find their way into the small corner pens (Fig. 25), when they are caught up and transferred to the separate pens in the series. Here they brood, hatch off, and are maintained for eight or ten days, when the old birds are caught up, the pinioning removed, and placed in a small rearing-coop. This should be done in the late afternoon,

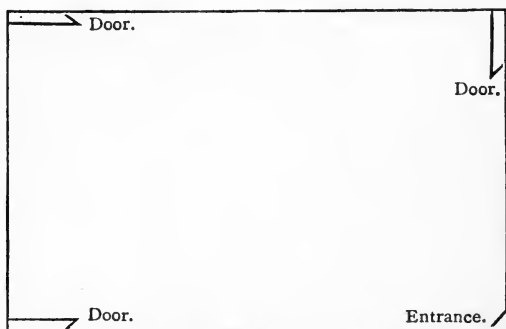


Fig. 25.—Plan of Partridge Enclosure with Corner Pens.

so that the old birds call in the young, and the birds roost in the coop. Before daybreak next day the coop is removed to the field—a cornfield for preference, and so arranged that by means of a long cord the coop can be opened at daybreak, when the old birds lead their brood out. The long cord, &c., is necessary, as the birds must not see the person who liberates them.

The pens erected in the series should have open wire-netting fronts, turfed up to a height of 18in. or 2ft., and be each provided with a small gate, preferably of wood. The tops should be covered in with bird-proof wire- or

twine-netting. If necessary, the central space may be utilised for extra pens.

From the description which has been given of this system in its main features, it will be observed that it is in no way to be compared with that of hand-rearing pheasants, nor is it in itself a system of hand-rearing partridges. It is, however, of considerable value, and provides a reserve of birds under circumstances such as have been only too frequent and widespread of late years, when birds have been drowned out by the hundred, especially upon the lower lands. The sites for the enclosures being adequately chosen, parent birds, the eggs, and the chicks at very early age, are placed beyond the reach of floods, and, to a large extent, protected from spells of bad weather, so that, even should disaster overcome the bulk of the wild birds upon a manor, there would still remain a sufficient reserve partly, if not wholly, to make good the loss for the following season, without incurring the great expense which disasters of the nature mentioned cause.

It stands to reason that the initial expenditure entailed by the adoption to any extent of this system is somewhat heavy, and would scarcely be possible upon anything but a partridge manor of considerable size; but there is no doubt that it can be applied to some extent, and in possibly modified form, upon smaller partridge estates. In any case, however, the initial cost would have to be spread over a number of years when counting results as compared with expenditure.

What has been written so far concerning the Continental system has been descriptive of what may be termed the idea as originally determined; but it may well be that all the surroundings necessary to full and complete success may not be present upon a British preserve, and it has to

be varied and modified to suit particular requirements. These modifications are generally due to an effort to fit the plan to less pretentious requirements. The end then held in view is to secure the mating in confinement of such a number of pairs of birds as may be deemed necessary, and their eventual nesting within the limits of a pen. It will be easily seen how this may be achieved by turning down a much larger number of pairs of birds within a main enclosure, and then as soon as they commence to pair to draw them off into movable pens of sufficient size in which they remain and brood. Of course, up till such time as the hen commences to nest, the pens require regularly moving twice or three times a week, according to what class of ground they are placed upon; the birds require very careful feeding, and the amount of time and trouble consumed is correspondingly greater. On the other hand, the plan is less expensive, but it is equally less successful, nor can the same amount of additional eggs be drawn for hand-rearing purposes. The great point to be observed in these matters is to disturb the birds as little as possible; but where the movable pens are employed the reverse is largely the case, with corresponding disadvantage. Personally, I do not see that much is gained by thus modifying the original system over ordinary hand-rearing as regards numbers and safety of the broods; but there is less packing, it is true, and the youngsters are reared under more natural conditions.

The feeding and general management of penned partridges will be dealt with in the following chapter, and it is now necessary to devote attention to another system worked in connection with the higher preservation of partridges, namely, that of sanctuaries.

A partridge sanctuary is, speaking roundly, a portion of a manor reserved from the rest, and upon which, except

under particular circumstances, no shooting takes place. Of course, upon the average preserve, or even upon an ordinary but possibly extensive partridge manor, anything of the kind is practically out of the question. It is only upon estates specially requisitioned for partridge-preserving upon a very large scale, and where the sport of shooting driven partridges has been brought to a degree of perfection unattainable elsewhere, that the institution of these sanctuaries is feasible or necessary. Two main reasons may be adduced for the establishment of these sanctuaries—that of a refuge for the birds during the shooting-season, upon the one hand, and that of a nursery from which the manor may be restocked, upon the other. Generally speaking, a partridge sanctuary may take the form of a more or less wide belt of country sandwiched in between the several beats. Its boundaries may be either artificial, or secured by the natural divisions of the ground by hedgerows or otherwise, and the width may be that of two or more narrow fields, or of one of sufficient breadth. The planting and tillage of the ground covered are made subservient to the requirements of the game and not to those of the agriculturist, although, of course, it is sought to assimilate the two interests where such may be necessary.

It will be apparent that a reservation of this kind may be employed in either way, and that once birds commence to take refuge in such, it can afford a means for assembling large quantities of birds for occasions of special shooting importance. The circumstances, however, which permit or encourage the institution of partridge sanctuaries are so exceptional in the ordinary run of game-preserves that it is beyond the scope of this work to deal with them in detail, and more than passing reference to such a comparatively unique feature in partridge-preservation is uncalled for.

CHAPTER XVI.

PARTRIDGES: Food and Feeding.

IN a preceding chapter the feeding of partridges was dealt with up to the stage when a purely grain feed may be offered them, *i.e.*, to the time when the age of the hand-reared birds reaches, say, three months. From this time onward partridge poults may be placed, as far as food goes, upon the same level as mature birds, except as having regard to the fact that the former at this period will, or should, have such a plenitude of natural food before them as should make the provision of any extra provender unnecessary. The tendency, however, of hand-reared partridges to become very tame, the absence of the mother bird, and an occasionally rather pronounced want of self-reliance, prompt them to look for a continuance of the preserver's assistance in this respect, and it is necessary—at times only, maybe—to make provision for them. Once they leave the coops, it is in the interest of the preserver, as well as of those who shoot, that the birds should become entirely self-reliant, even at the expense of the loss of a few of the least fit, so that the provision of food other than they can of themselves discover in the fields should not be made too readily, and then only at evening, when they feed for the last time before roosting.

In regard to partridges, I can find far less objection to the use of maize than in connection with pheasants; but moderation in its employment for feeding is to be recom-

mended. The smaller kinds are the best, and with it the screenings of inferior quality—but not inferior conditioned—foreign wheats are by far the best material to employ. That is, in regard to the hand-reared birds as and when they leave the coops. At a later stage, when the fields become bare of grain, insect-food is running short, and the innumerable multitude of weeds are dying down, the young partridges having matured, it is practically only mature birds which have to be dealt with. It is then that the partridges require most care and most feeding. So long as the circumstances remain favourable, and the weather keeps open, the birds suffer no particular hardship, but except under special conditions, as provided upon the great partridge manors, the modern practice of agriculture is entirely opposed to the requirements of the partridge. As stated previously, I place more importance upon the proper care and provisioning of partridges during the winter months, in regard to their prospective health and fertility, than upon anything else connected with the preservation of these game-birds. It is for this reason that particular attention is devoted to what may be termed the winter feeding of partridges.

It is a widely-prevailing error that, except under very abnormal circumstances, where a considerable stock is maintained, partridges require little care during the winter months. It is an entirely mistaken idea, and responsible for many instances of "poor partridge prospects." As a matter of fact, partridges will frequently starve and die under adversities of weather which only subject pheasants to comparatively short commons. The latter possess a far larger dietary than do partridges, and where they require winter feeding to keep them in good condition and up to the mark, the smaller game-birds require it actually to keep them alive.

Unfortunately, the winter feeding of partridges is more difficult and less satisfactory an operation than the winter feeding of pheasants. It is easy enough to provide the right description of food; but it is quite another matter to bring it to the actual birds that require it; for, unless disposed in proper fashion, you are as likely to feed all the fowls of the air as the particular game stock in view. The state of the weather is, of course, the chief guide to the necessities of the partridges, and must also bear upon the manner in which the food is provided for them. Very wet weather, with cold driving winds and periods of heavy snowfall, are those conditions which affect partridges most adversely in their search for food. During the first-named conditions, they will lie so closely, and stick so obstinately to their places of shelter, that they become emaciated and weak before they start out in search of much-needed food, frequently finding then that their strength of wing and limb is unequal to the task of adequately providing for themselves. In times of snow, especially when it is followed by severe frost, and everything becomes practically ice-bound, partridges suffer severely from the inability to obtain sufficient or any food at all, and with a continuance of it die in large quantities.

The scheme of pheasant-feeding which I have already detailed is quite unsuited to the case of partridges, in dealing with which quite a different mode of procedure for providing food in winter must be followed. When bad weather sets in, the preserver must make himself acquainted with the exact localities of his birds. They will be there, either as whole coveys, remnants of such, or in larger or smaller packs. These will be found to pass the night at or near the same spot, and with this for guide it will be no difficult task to determine their prospective feeding-grounds. During hard

weather they will be along the hedgerows (the lee sides), in rough broken ground, brakes, and the like, and upon any stubbles—in fact, in any places where the nature of the ground is calculated to break the mantle of snow or frost. Having ascertained where the birds seek their food, arrangements may be made to feed them according to the nature of the places chosen.

If it is a hedgerow or a stone wall which has to be dealt with, a kind of food-store is necessary. To form this, drive some stakes, from 2ft. to 3ft. in length, into the hedgerow. The stakes should be driven in at an angle of about 45deg., and be in couples, sufficiently close to admit of two or three battens, 3in. wide and $\frac{1}{2}$ in. thick by about 15ft. long, being laid and fixed between them (Fig. 26). In and out between these battens, bunches of heather, broom, gorse, or spruce branches should be laced, with their ends sloping upwards against the hedgerow, and the other extremities extending towards the ground, which they may just touch here and there, but not closely enough to prevent the ingress or the egress of the birds coming to feed. In this way a form of sheathing is constructed along the lower side of the hedgerow, giving ample room for partridges to pass freely along, and beneath which the food may be scattered. It is, in fact, a miniature sloping-shed.



Fig. 26.—Section of Partridge-Shelter alongside a Hedgerow.

A length of about 15ft. is sufficient, but where more accommodation is necessary, several separate ones should be put up at distances of some yards apart, or on different sides of the fields.

The spots chosen should be dry, and naturally selected with a view to suitability for the purpose intended. The food should be scattered beneath the sheathing, and sparse lines of it dropped, so as to attract the birds to the ends and any openings in the sides. Barley, tares, hemp, and millet-seeds, with a small quantity of maize, are the best foods to provide for the purpose.

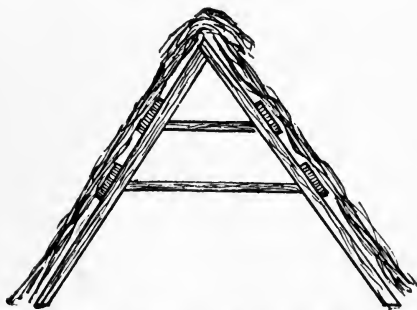


Fig. 27.—Section of Ridge-Shelter for Partridges.

In those parts where earth hedge-rows and stone walls give place to quick hedges of thorn and other growth, the form of food-shelter already described would be impracticable; consequently, another means must be employed, where

the partridges may be successfully fed in winter. To this end, some open frames in the form of inverted troughs must be constructed (Fig. 27). They should be from 12ft. to 15ft. in length, about 18in. or 2ft. high, and the extremities of the sides about 1ft. apart. Lath-wood is the most suitable material to employ, and the shelters should be roughly thatched with wheat or oat straw. The easiest way of doing this is to employ a long, curved needle, and to sew the thatching, as it were, on to the framework. The ends of the thatching should be left loose, and should

just reach to the ground. For the places of disposal of these food-shelters, choose the best protected and warmest corners of the fields or expanses where the partridges congregate, and feed beneath them with similar food to that already named.

Where the partridges frequent brakes, commons, and rough spinneys, in their search for food, there is always considerable difficulty in reaching them in severe weather. Under certain circumstances, food scattered about in likely places may serve good purpose; but it is better not to rely upon this. A better and more trustworthy plan is to secure some stakes about 4ft. or 5ft. in length and about 2in. in diameter. Sharpen these at both ends, and drive them into the ground. Upon these thrust small sheaves of oats, barley, or wheat, but ears downwards, and just reaching to the ground. The sheaves must be very tightly bound, or some obstruction must be placed upon the stakes to prevent the sheaves from slipping too low. Then the ends of the straw should be bent outwards and downwards, so as to form a mushroom-shaped covering for the ear-ends of the grain. The sheaves should be specially bound up with the bind-rope nearer to the ears by one-third of the length of the straw than to the other extremity.

In some districts, partridges appear to roam continuously, especially in open country where there is not very much nor very general cultivation. These birds are very difficult to provide for, and the only means of assisting them with food in winter is by scattering loose grain where they are likely to find it. In this connection, it may be mentioned that the neighbourhood of gaps and gates usually prove most suitable for such purpose.

As to the best time for putting down food for partridges, it will be obvious that varying circumstances must serve

as the guide. Generally speaking, it may be said that partridges in winter will be in search of food, as a rule, very shortly after daylight, and again an hour or two before sundown; but in view of the fact mentioned, that they stick very closely to cover during severe and stormy weather, a break in the condition of the elements, if of any promised or likely duration, will also offer them the opportunity for which they have been waiting.

Of course care should be taken as far as possible to see that the food is actually consumed by the game-birds it is intended for, or that they at least secure their fair share of it. Naturally, if other birds are scared away, the partridges are as likely as not to disappear with them; consequently, it may be necessary at times to feed the other birds too.

The feeding of partridges under the French system, whether in the main enclosure or in the separate pens—movable or otherwise—must also command some attention, although this portion of the subject has been dealt with already to some extent. It will, however, only be necessary to make reference to one or two points. Birds penned in the main enclosure require a certain amount of meat to replace the insect-food which, under the circumstances, will be absent, and, according to the capabilities of the ground upon which the enclosure is situated, so will green food have to be supplied in small or large quantities. When such is the case, it is best to mix it up in a finely-chopped condition with the grain given them, feeding it to the birds in shallow pans. The grain best suited to penned birds will be wheat, dari, and buck-wheat, with a little canary- or hemp-seed from time to time. Maize may be given also in moderate quantities; but in any case the diet should be varied as much as possible from day to day, or every two or three days.

Under all circumstances in connection with the feeding of partridges, whether in pens or coops, it is most necessary to remember and observe the greatest care as to cleanliness and freedom from infection. What was said in this connection with regard to pheasants holds equally good concerning partridges, as also do the remarks with reference to a provision of grit. Sharp, clean flint or other sharp grit is necessary. Ordinary gravel or road-scrapings, &c., in which the grit consists of rounded stones, is of no value whatever to the birds for the purpose intended. The important matter of water for partridges must be dealt with precisely in the same manner as with pheasants.



CHAPTER XVII.

PARTRIDGES: Protection.

THE protection of partridges is a very different business from that of protecting pheasants, the various items of which have had due attention and consideration given them. Partridge-preserving is just what its name implies for the most part, and the protection afforded the birds is the mainstay of their powers of increase. Unless partridges are protected they die off. All the means recommended for increasing the stock of birds may be employed, but unless some sheltering aid is afforded, the birds will not increase eventually, nor even maintain their numbers, but will slowly decrease to a mere scattering of coveys, few and far between.

Besides this, partridge-preserving is dependent upon so many side issues for successful results. Any landed proprietor who has suitable coverts can rear pheasants and preserve them, but partridges require far different conditions for existence, which are mainly found in the cultivated fields of the farmer, whose ideas of what is necessary very often differ from those of the landlord, or the proprietor of the shooting. The result of this divergence of opinion respecting game-preserving may prove most unpleasant. Of course, there are more farmers who support game-preserving than find it a grievance, and who are first to look after the partridges' weal; but it must be remembered that there are men who imagine that

by placing their foot on a nestful of olive-brown eggs they strike a blow in the cause of tenant-right or labourers' grievances. It is against this sort of thing that the partridge-presenter may have to contend, besides the poacher and the vermin, and tact in this respect is necessary. If the man who owns or rents a shooting over the land of farmers who take the unkind view of things attempts to deal in any harsh or overbearing manner with this kind of poaching—for such it is—he will have probably poor sport for his pains, and suffer losses which might otherwise be avoided.

I have referred to this matter now, because it is in the preserving of partridges that it comes most to the fore, and because good sport in the month of September can only be expected when good feeling prevails between the cultivator of the soil and the preserver of the game.

The partridge suffers more from attacks by vermin than any other of our game-birds. It is the least difficult for winged and furred marauders to capture and destroy, and it possesses less means of defending itself against their rapacity. From the eggs to the full-grown bird, every varmint that runs or flies is on the look-out for them. The polecat, where still in evidence, kills the hen bird on her nest, and the broods of young; the stoat carries on the same practice, while both of these vermin may destroy a covey in the night; weasels are for ever on the look-out for the eggs, and cats have a nasty knack of killing the females whilst sitting. Foxes are equally delinquent, whilst the poaching dog is responsible for the loss of many birds and broods.

Of the feathered marauders I need say little, but it will be to the point. They are all equally bad—hawks, crows, rooks, magpies, and jays. Even the common snake cannot resist them; and young birds, as well as the eggs of

partridges, are at times destroyed by it. I have even known the mole to abstract the eggs, and take them underground, but for what purpose I cannot say with certainty.

I fancy the moles burrowing under the nests are attracted by the warmth of the sitting bird in the first instance. Weasels working—as they so frequently do—in mole-runs will carry the eggs off through the runs; but I have more than once found moles doing the same thing.

The next cause of diminution in partridges is poaching; but as the preserving of this game-bird differs from that of the pheasant, so the style of poaching them differs. Poachers rarely shoot partridges except they belong to that class of men who poach for profitable sport. The partridge poacher who works for the money it brings in alone does not care for shooting. Netting and snaring are more to his taste, and a remarkably good hand he is at the business as a rule. Crafty to a degree, he generally makes the game pay—literally. His netting is mostly a night performance, snaring or hinging a day one; he knows where every covey “jucks,” and can act accordingly. Either the long-net drawn across the fields, which involves the presence of two or more of a gang, or the small net worked by one or two, is chiefly used, the services of a suitably-trained dog being also often brought to bear.

To prevent this mode of netting, all fields where there are partridges must be “bushed.” Bushing consists of fixing any kind of obstacles in the ground by which the net may be torn, caught, or entangled. Bushes may consist of any kind of thorny shrub, branches of blackthorn, whitethorn, and thick brambles, the last-named fixed thin end downwards. Plain stakes provided with a few projecting nails may also serve for bushing. Gamekeepers

should know where their partridges nest, and bush accordingly. The proper way to do this is to place the bushes, fixing them, some firmly, some loosely, from 20yds. to 30yds. apart each way, so that the bushes of one line come opposite the intervals in the other. Netting partridges only pays the poacher in the early part of the season, and extra vigilance is therefore necessary during the two or three weeks or so subsequent to the "First." It is, however, during the week previous that the largest depredations are carried on, and early in the morning on the "First," when shooting will go on unless one is on the look-out to prevent it.

Snaring or hingling is chiefly indulged in by labourers and ne'er-do-wells. The dusting- and nesting-places are the most suitable and most favoured spots, and the business often proves very successful. Only systematic vigilance and observation on the part of the keepers will prevent it, and on that alone can one rely. It is a simple but very effective style of poaching and much worked, so that no man should flatter himself that his birds are not being snared. Boys can do it as well as men, and an eye should therefore be kept on everybody.

Egg-stealing is another style of poaching; it is practised to greater extent nowadays than with pheasants, but is carried on by the same class of people. Its prevention is simple; never purchase any partridge eggs except from recognised sources; do not allow people to gather "wild-flowers" during the nest season of partridges, and summon someone who is trespassing if you can get the chance. Taking it for granted that the keeper knows all the nests, if one goes, put on a watch to catch the thief of any others. Vermin leave the shells.

Egg-destroying is also prevalent, and is as mean a trick as one man can play on another. Labourers who ask

for a rise of wages and do not obtain it, or those who have been discharged for idleness or bad behaviour; people who have been warned about trespassing; farmers who consider bad seasons and low prices are caused by their landlords or due to game-preserving—these are the kind of poachers who step on a partridge's nest or kick a brood of young ones to death. They are poachers, and of the meanest sort.

The necessary protection of partridges from the various modes of destruction so far detailed is obvious enough. The gamekeeper's duty, pure and simple, must be the preventive, and the remedy more certain vigilance for the future. Partridges must in addition, however, be saved from themselves, as we have already stated. Old and bachelor cocks must be done away with if the stock be to increase, and not to stay at a certain quantity year after year.

Bachelor cocks are either those which have become effete, or for some reason do not pair, and separately or collectively prevent other birds from bringing their breeding operations to any material result. These bachelors should always be destroyed, as well as what are technically termed "hen cocks"—that is, birds which suffer, as hen pheasants do also, from a disease of the ovary that precludes their breeding, when they assume the colouring of cock-birds, and act in the manner of "bachelors." These must also be killed off, for they worry the nesting-hens to such an extent that the latter are often unable to deposit two eggs on the same spot. Everyone has found single partridge eggs lying about in any and odd places. This is usually the result of the presence of "bachelors" and "hen cocks" on the preserves.

During the nesting season it should be one of the most important duties of the keeper to "beat" the clovers and meadow-grass with a view to the discovery and marking of

all partridge nests situated within them, so that when the fields are being mown for hay a yard or two square may be left round each nest not brought off. To beat clovers successfully two men and a boy are necessary. The men stretch a line 100yds. or more in length, and draw it gently and evenly along the top of the verdure, the boy walking a few yards behind carrying a bundle of sticks, each one having some distinctive mark fixed to one end. Whenever a nest is found it is marked by placing a stick, not near it, but at a certain distance off in a certain direction, these being the same at each nest in every field, or varied from field to field. Thus in the old pastures the mark might be placed fifteen yards to the right of each nest, in the clovers an equal distance to the left. Before the field is mown the keeper can, of course, mark out each nest distinctly; meanwhile, the sticks prove no guide to egg-stealers, &c.

The proper time for bushing fields must depend upon the crops growing in them. In barley fields the bushing must be done as soon as the crop has been rolled, oats the same, wheat immediately when sown. For these, brambles are the best to employ, because when cut green and stuck in the earth either end first they continue to grow, and being of the same colour as the corn are almost unobservable. Turnips need only be bushed after they are hand-hoed for the last time; fallow land and stubbles, whenever birds lie in or visit them.

Before closing this chapter it is well to repeat that the preservation of partridges upon the average estate differs largely from that of other game, being dependent on the one hand on the ever-watchful care of the gamekeeper over his birds and the destruction of vermin; and on the other, to the cordiality of relations between class and class which is so necessary and delightful a feature of rural life.

CHAPTER XVIII.

PARTRIDGES : General Management.

THERE are one or two points in connection with the preservation of partridges which hardly lend themselves to discussion in detail under the general headings of the previous chapters, and which it is necessary to consider as bearing upon the successful preserving of these birds. One of the most important of these is the numerical relation of the sexes and the mating habit amongst partridges.

It has been practically conclusively shown that the relative numbers of male and female partridges in these islands are as sixty-five to seventy-five, which, seeing that the birds are strictly monogamous, points to an actual excess of hen- over cock-birds. This is not an unusual feature amongst birds which pair annually or for life. Taking into consideration the manner in which it is usual to kill down the old cock-birds, not necessarily effete, it is by no means surprising that of late years the cry of barren birds has been a frequent and a widespread one. This has been the case to far larger extent upon the ordinary preserves than upon the large partridge manors, and is due to one or two somewhat widely differing causes. It is attributable to some extent to the shooting of driven birds where driving is not thoroughly understood and carried out, and also to the

practice of dealing with what are loosely termed the "old cocks" upon lines more akin to those which are applied to pheasants than what should be the case as regards partridges. The eventual result in either case is that a preponderance of hen-birds is left, and—what is to me rather curious—a packing in small quantities of cock-birds just about mating-time. The remedy for this state of things must partake of a twofold nature. In the first place, shooting should finish at the end of December, and the killing of all the really old cocks be left to the keepers during January, and then, according to the season, if late or early, the whole of the stock should be beaten up and the pairs already made broken, either at the end or middle of February. It must be carried out in wholesale manner to be effective, and each beat or the whole preserve be dealt with at one time. A general round-up of the birds should be made, driving them to a common centre, and then dispersing them again, or they should be driven from one side of the beat or preserve to the other upon one day, and back again the next. The result of such manœuvres is exactly opposite to what those unacquainted with the procedure might suppose, and although the birds mated up to that point may be sundered, the eventual outcome is a far less percentage of barreners than would otherwise be the case. There results further a far greater commixture of the partridge blood there may be upon the estate than is at all likely under ordinary conditions.

Another point necessary of elucidation is that relating to the brooding of the partridge. It is a very common error to suppose that this game-bird broods a second time. Late broods mean late nesting. Once a partridge has incubated her eggs, if only for one twenty-four hours, she does not, if her nest be disturbed, destroyed, or if she by any reason of weather or otherwise be caused to

desert it, nest again that season. It may be, but it is not always the case, that if before a partridge has ceased laying that particular nest be disturbed, causing desertion, or be destroyed, the bird will nest again; but this is all that can be counted on. It is necessary to make these facts clear, because so much depends upon the successful mating and brooding of the partridges upon the average preserve, and if by reason of an unfavourable season anything occurs seriously to interfere with it, there is no possibility, except from outside sources, of rehabilitating the preserve until the second year following. It is under these circumstances that the Continental system proves its value, and that resort may be made with much advantage to the introduction of Hungarian birds upon the manor depleted of breeding-stock.

What is generally spoken of as the Euston system is also applied to partridge-rearing where and when the chances of losing whole clutches by stray dogs, foxes, and other vermin are somewhat pronounced. In connection with partridges, the nests are sought out and the eggs taken as they are laid, the actual ones being replaced by artificial substitutes or by rotten or unfertile ones, until such time as the partridge broods, when the eggs are simultaneously placed under hens, which sit on them until incubation is about to be completed, when they are replaced under the hen game-birds, the dummy eggs being removed. The eggs are then speedily hatched off and wild-reared.

There may or may not be a great deal to recommend this system; but it is certainly one which the ordinary game-keeper does not take to kindly, and personally I doubt whether it be at all suited for general or even partial adoption with success. The time consumed and labour expended in prosecuting it are alike excessive, and I am convinced that if greater attention and care were given to

protecting the nests of the wild-nesting birds, a greater measure of success would accrue than is likely with this application of the Euston system.

What is infinitely easier and far more effective is to seek out all partridge nests, as is necessary for bushing purposes already, and wherever it be possible, to place a circle of 4in.-mesh wire-netting—the ordinary sheep-netting—round the nest at a distance of from 5ft. to 6ft. from it; 3ft. to 4ft. is sufficiently high, and the wire should be fitted round the nest when the bird commences laying. The hen partridge will, if undisturbed, pass in and out through the wire without any compunction; but in almost every instance neither passing dog nor fox will go within the limits of the circle of wire-netting. As against this plan, however, is the fact that where egg-stealing goes on, the poacher has a good mark to guide him to his loot.

The fact that the cock partridge will prove as good a mother to the brood as the hen herself, should anything happen to her, is sometimes taken advantage of by keepers hand-rearing partridges under the modified Continental system. Instead of trusting them to a foster-hen, they allot some of the penned cocks to broods so hatched, and it is found that the cock partridge will take to them and rear them as well and as wildly as a hen-bird, and that the packing of the broods is so avoided. This is an interesting and instructive practice which might be more largely worked when partridges are reared from penned birds, and where there may be a surplus of eggs.

CHAPTER XIX.

RED GROUSE: Natural History.

To the ordinary game-preserved the natural history of the Red Grouse—or, to adopt the usual appellation, of *the* grouse—is unimportant compared with that of the pheasant, the partridge, or even the Black Grouse, inasmuch as of all game-birds *Tetrao scoticus* has most right to be denominated wild. The whole system of grouse-preservation nowadays is so much an art that a mere knowledge of the habits of the bird, such as may be imparted in the limits of the present work, can but serve as a starting-point from which its life-history may be gathered.

When dealing with the Red Grouse, we come to a totally different form of preservation from that by which partridges and pheasants are maintained; so much so that the knowledge acquired by a Highland keeper, with a life-long experience upon certain moors, is something that he cannot impart to others upon any hard-and-fast lines of instruction. The man with intuitive faculties in this direction, reasoning perhaps largely by analogy, will be able to grasp precisely what certain moors require, and extend that particular form of preservation towards them which will bring permanent success. Another, lacking these instincts, will be incapable of grasping the situation, and all the teaching in the world will not enable him to preserve grouse satisfactorily or successfully.

However much, moreover, the preserver may desire to

know and to seek to inform himself as to the manner of grouse-preservation, he cannot, under anything approaching ordinary circumstances, be otherwise than wholly dependent upon his keeper for the carrying-out of his wishes. He may certainly touch the fringe of the science—for such it is—and he may make himself thoroughly conversant with the general principles which govern grouse-preservation; but it is the keeper who from day-in-day out, yearly, long observation alone can gauge the signs and portents which govern his every action. The grouse-keeper, whether of the English and Welsh or of the Scottish moors, is born, not made, and it is rare indeed for a Southern or an ordinary gamekeeper to pass successfully to the care of a moor.

I shall, however, continue to follow the scheme pursued in dealing with other game-birds, and place as much information before the reader as can be profitably given in print without dropping into any of those theoretical disquisitions so dear to the average grouse-shooter.

The grouse is indigenous in all parts of the British Isles. In England it prevails to more or less extent on the moors of the four Northern counties of Lancashire, Yorkshire, Derbyshire, sparsely in Staffordshire, and in appreciable extent in other counties. In the mountainous parts of Wales it is also a staple bird of sport, as also on most of the great Irish moorlands; but nowhere is it so abundant as in Scotland, particularly in the North or the Highlands, and in the large islands generally on the Western coast.

The reason of this abundance is not far to seek. The grouse is emphatically a denizen of the moor, and it is, moreover, a thoroughly *wild* bird, which, although amenable to preservation to large extent, resents intrusion by either man or beast upon the uncultivated, unfrequented,

almost desolate lands which are its sole habitat. Wherever the improving hand of man encroaches, the moorcock flies before him. It is not because the heather-covered lands of Aberdeenshire, of Sutherlandshire, and elsewhere, possess inherent peculiarities that they become acceptable to the grouse; it is because shepherds and sheepdogs do not daily scour them, because the heather is not burned solely to make way for the growth of pasture, and because the many other conditions are not present which mark the progress of agriculture. The grouse seems to have little preference as regards the nature of a given moor, provided its haunts be sufficiently free from intrusion, and present the well-known characteristics of abundant heather and dry waste land. It evidently prefers land of a medium description, between the barren stony wastes where ptarmigan may be sought for, and the marshy low tracks of moor, bog, and young plantations which seem chiefly to suit the tastes of Black Game. It must not be imagined, however, that grouse do not lend themselves to some extent to altered conditions of existence which may be forced upon them. On the contrary, the labours of game-preservers in introducing hand-reared birds have certainly been successful in retaining grouse in the neighbourhood of cultivated ground, and despite the presence of flocks of sheep and their belongings on the moors. The successful establishment—although upon a small and experimental scale—in Suffolk must also not be overlooked. It is difficult to specify the peculiarities which cause one moor to be held in more favourable regard than others by the birds, but there is no doubt that such is the case. The chief desiderata, it may be assumed, are that the formation of the ground serves to some extent to shelter the slopes principally frequented from heavy inclemencies of weather; that any rain falling be readily carried off, leaving a

quick-drying surface ; that the cover be thick ; that there be frequent inequalities of surface ; and a good supply of food besides that from the heather. Grouse have no particular spots which they frequent as roosting-places, but will roost in one particular spot or close to it for several nights, sometimes for a week or so in succession. They are, however, very uncertain birds, and shift their quarters apparently without reason or aim.

Curiously, the Red Grouse is monogamous, so strictly, indeed, that I believe the instances of departure from this rule are curiosities of zoology. This appears as a singular characteristic, for both Black Game and the scarce capercaillie are polygamous. The birds pair in the early spring, or rather at the end of winter, and by the end of February all the mating is over. By the end of April laying is in full progress. Sometimes birds will pair as early as the first week in December, but these premature matings are apparently ended on the first severity of weather. The nest is made in any slight hollow beneath or in the centre of a tuft of heather, where no water can, or rather should, accumulate. The furnishing of the nest is very slight—some bits of moss, or ling, and bents scraped together from near at hand. In this apology for a nest the eggs are deposited, varying from four to thirteen or fourteen, but the average is probably between seven and ten. As soon as the young are hatched, the hen alone completing the incubation, they are taken care of by both parents, the hen assuming immediate charge, while the cock watches assiduously to protect his progeny from the attacks of vermin. The brood remains with the old birds until the autumn, when the family is broken up, and the birds pursue their respective courses, although remaining to some extent in consort till the "packing" of winter begins, when the broods become finally spread.

The daily routine of the Red Grouse's existence has features of its own. It is decidedly an early bird, and takes its first meal betimes in the morning, resorting subsequently to those spots where the day is passed in basking and other quiet occupations, after which, in the afternoon, it seems to turn its attention to feeding again, and goes to roost early. In an undisturbed state grouse rarely fly at dusk, much less afterwards, nor are they to be caught napping among their haunts at sunrise. Their food consists for the most part of some of the natural vegetable products of the waste lands which they frequent, and comprises chiefly the following: the tender portions of the ling or heath, commonly termed "heather"; of the heather proper (*Erica cinerea*), generally called "heath"; several kinds of sedge and other grasses, and various descriptions of mountain berries, among which may be mentioned, as the commonest, the whortleberry, the cranberry, the crowberry, and the red bearberry; also the shoots and leaves of these according to the season. To enumerate all the plants upon which grouse feed would be difficult. During winter they often become, like many other birds, very short of food, and when the supply is too scant on the weather-beaten moors, they have recourse to the fields and stubbles of farmers, and to outlying plantations. It has of late years become recognised as a necessity that grouse be fed with corn, &c., during severe weather, and seeing the numbers of birds which some moors have to support, the practice must have approval, alike from a humane and a practical point of view.

It will be seen that though a hill be wanting in heath or heather, it may still prove an attractive place for grouse to feed, owing to its producing other suitable food. This bird is one that alters its habits to a very inappreciable extent according to the season, and unlike its more sombre

congener, will frequent precisely the same expanse of ground from one Midsummer Day to another, unless ousted by sportsmen or other irresistible cause, and the mere shooting of some members of a brood will not create any impulse to migration in the remainder. This matter of migration must, however, receive attention at a later period.

Not much, perhaps, would be gained by going further into the natural history of this member of the *Tetraonidæ* here. As was said before, a real insight into its mode of life and idiosyncrasies is only obtainable by personal observation in its moorland haunts.



CHAPTER XX.

RED GROUSE: Introduction and Maintenance of a Stock.—Feeding.

THE introduction of Red Grouse upon a moor is a very different matter from that of pheasants into existing coverts. The first obstacle to the establishment of a moor would probably be found in the acquisition of a suitable expanse of land. Nowadays deer-forests, so-called, are very much on a level with sheep-farms, or, at least, it is sought to make them so, and the question is often debated, Which would be the more successful, commercially considered? But, whether rightly or not, grouse-moors are regarded as an expensive luxury, and as affording comparatively no recompense in rent to the owner of the land. Consequently, it is much easier to acquire a moor than to obtain an expanse of hill land, for the purpose of introducing and maintaining a head of moor game. It is a case of "first catch your hare." First acquire your moor not preserved, but ready and suitable to commence work on. A suitable moor must have two qualifications: first, and of chief importance, a natural adaptability of soil, situation, and general character for the rearing of grouse; and, secondly, unlikelihood of being rendered practically useless by reason of its surroundings.

The soil of a grouse-moor is the first matter for consideration, for unless that be suitable, it is useless seeking

to maintain grouse upon it. Either it may be incapable of producing the variety or quantity of natural growth necessary, or it may drown out the birds in wet weather by reason of its holding instead of running off the rain. It is, doubtless, true that moorlands all bear much the same character in respect of soil, but it is also true that they vary more considerably than is generally imagined. It will often be noticed that, notwithstanding a very sheltered position, some portions, often of large extent, exhibit a sterility quite extraordinary, beside another occupying a most weather-beaten aspect. That this is due to the soil to some extent is certain, but more probably to the distance of the surface mould from the underlying rock. One side of a hill exposed to all the roughest storms of wind, rain, and cold may be thickly clad with heather, ling, and berry-bearing plants; the other, occupying the side of a sheltered valley, scarcely bear a blade of grass or a tuft of heath. It is, therefore, necessary, as the first step, to discover whether the moor be capable of producing, or, in fact, does produce, a sufficiency of the indispensable cover and food for the birds, embracing in large proportion the several plants enumerated in the foregoing chapter.

In a wet season, partridges, chiefly the young birds, are drowned out to enormous extent on the clayey lands; and the same causes which bring this about effect, in similar fashion, the deaths of thousands of young grouse or "cheepers." Moorlands at any time are not the least rainy parts of the country, and when for five or six days in succession the deluge is repeated, they become neither the driest nor the cosiest of outdoor habitations. On unsuitable moors, or those which by reason of their nature or situation are unable to run off the surplus water quickly, the ground becomes soddened, every little depression

becomes a pool, and every gust of wind scoops the water out of the holes and flings it over the upstanding tufts and expanses ; so that the grouse of mature age are hard pressed for shelter, while the young of all ages and sizes find it terrible work to withstand the wet, and in bad places go down before it in tens and hundreds. The necessity, therefore, of choosing a quickly-draining moor is evident to the most inexperienced. The essential character of a moor may be said to consist in its unevenness of surface. A very slightly undulating expanse of closely-heathered land is rarely so much affected by the birds as one abounding in abrupt irregularities, a good " up-and-down sort of place," in fact, where the projecting granite stones are found in clusters, surrounded by luxuriant growth of moor-plant, and where the brooks and burns are plentiful. In the more frequented and cultivated districts a belt of plantation, old or young, between the parts frequented by man and the domain of the grouse, is not only a great advantage but an allurements to the birds, although they are not given to frequent wooded land.

Another very important matter is the surroundings of a proposed grouse-moor. It may be very well to acquire a tract of land, and say you are going to rear grouse, &c. ; but when your neighbours happen to be sheep or cattle farmers, with a host of active stock on all sides, and for ever straying on it, or crossing it, or being driven at a wild gallop out of it, the matter assumes another aspect. It is not possible to have a wall to keep them out, and it follows that unless neighbours are agreeable, grouse-rearing is out of the question. The best advice to anyone wanting a moor is to acquire one in a part where grouse-rearing and preserving and shooting are the only business. It may involve a tedious wait, but sooner or later one is sure to drop on the right thing in the right place, and if it

be not already used for the multiplication of *Lagopus scoticus*, so much the better, as the interloper will earn the gratitude of his neighbours who pursue the practice.

The establishment of grouse on land where for some time previously they have not been preserved, or scarcely ever been seen, is a work of some difficulty. That it may be done has been proved over and over again, as witness the large head of grouse on many manors where there were formerly none or very few. But it is a matter requiring a far greater amount of care, attention, and experience than the introduction of pheasants or partridges upon a wooded estate or an ordinary manor. It is one, moreover, which requires considerably more *finesse* than most people suppose. Highland and the North-country keepers certainly bring a fair share of experience to work, but they bring as much tact and wiliness, which stand them in good stead in obtaining and keeping birds upon their lands.

Grouse to be turned down upon land must be obtained from places possessing similar characteristics of locality and climate to those upon which they are to be introduced—at least, as much so as possible, for unless they are, the likelihood is that a large percentage will fail to establish themselves. The first months of the year are the most favourable time for obtaining birds, and the autumn the next desirable. If in the former, the earlier the better, as there is then good opportunity offered the birds to mate quickly and remain. In autumn young birds may be obtained and turned away sufficiently early for them to learn the ins and outs and resources of their new lands. The birds are best conveyed to their destination late in the day, and liberated at dusk. Some food may be scattered around in case it be required at first. Of course, the difficulty is found in the securing and conveyance of the birds. There are many grouse-moors held as commercial

speculations rather than exclusively for sporting purposes, whose owners would be but too glad to earn the highly remunerative rates live grouse would bring them. The transportation is most easily effected in dark hampers and baskets ; but as the birds will probably neither feed nor drink while confined, it is of paramount importance that the removal be as expeditious as possible. I would, however, rely far more on the hand-rearing of birds than on turning down, either for the nucleus of a head of game or for the increase of the present stock. They are moderately easily reared, and under any circumstances this is sure to be found the most practical mode.

The maintenance of a stock of grouse depends chiefly upon the assiduity with which vermin is killed down and upon the careful protection of the game from poachers, but also to a considerable extent on guarding the birds against the evils incidental to sheep-farming and on the periodical introduction of fresh blood in the shape of eggs brought from a distance, hatched out either under a hen grouse naturally or hand-reared and turned down. Moors will sometimes get game-sick, and the production of a superabundance of birds will often bring about an epidemic "disease," which will be set down to a dozen causes other than the right one.



CHAPTER XXI.

RED GROUSE: Hand-Rearing.—A New System.

THE hand-rearing of Red Grouse is for various unexplained reasons generally considered to be very troublesome, unsuccessful, and unproductive. It is, however, by no means so fraught with disadvantage as is supposed. It is not, of course, the comparatively easy matter that pheasant-rearing is, but it is at the same time practicable, and if embarked in and carried out seriously, a very feasible and useful undertaking. Two reasons may be adduced on behalf of its more general adoption—the time it saves which a game-sick moor would otherwise take to recover itself, and the scope it affords for providing fresh blood on moors somewhat taxed by their head of game. Eggs must be obtained under natural conditions, and, moreover, in a careful and considerate manner; otherwise the mere abstraction of one may cause the nest to be deserted by the mother-bird, while disturbance, whether by man or by dog, after incubation has commenced, will in nine cases out of ten result in abandonment. It is necessary, therefore, that great precaution be exercised in obtaining eggs, whether from a distance or from one's neighbours, for, instead of being quite fresh, it is possible that the eggs of several disturbed and partially-incubated nests will be supplied, with the result that much time, trouble, and many opportunities will be lost. As it will

rarely be desirable to rely on eggs from one's own birds, the importance of attending to this matter will be easily seen. The distance from which the eggs are brought need not be great, provided they be the produce of birds which do not in any way intermix with those whose numbers it is intended to augment or to improve. Grouse are laying, of course, much earlier in the season than pheasants or partridges; consequently, the arrangements for rearing must entail somewhat more trouble; besides, the habits of the birds must be taken into account in greater degree. The rearing of these game-birds is, however, the exception rather than the rule; consequently, large permanent preparations are not required, and what may be termed temporary makeshifts take their place.

The first consideration must be the site for the breeding operations. If there are facilities for rearing the birds on the open moor or the borders of it, so much the better, and provided there is a keeper's lodge or a cottage within handy distance, it must be utilised. If, however, this be not forthcoming, and recourse must be had to some part of the home farm or an outlying one, then the best place to choose is some warm, sunny spot, either in the corner of a field or the side of one of those broad, rutted, rough tracks called "roads," through the farm, or the bank beside a plantation—in fact, any place where sun and warmth predominate, and where vermin and intruders are unknown. Should such a place be decided on, the matter of shelter is easily met, but on the open moor the case is altered. The vicinity of a small lodge or a house would be a source of protection, and the coops containing the youngsters could be moved so as always to benefit by it; while a supply of 5ft. to 6ft. wattle hurdles must not be overlooked as a means of warding off the wind, the rain, and the cold.

The instructions which were given with regard to setting

pheasants' eggs hold good, in a great degree, for those of Red Grouse. Thirteen or fifteen eggs are the best number to set, and a hen of the usual kind should be placed in the hatching-box, shown at Fig. 2, page 44, on a clod of turf; the box should be protected further by being placed either beneath a temporary shelter of boards along a hedge, or have a cover about 2ft. 6in. by 3ft. placed over it slantwise, so as to keep off wind and rain, without closing up the box completely. If any number of sittings are being brought off at once, set several clutches in a row beside the hedge, and put up a shelter roof for the time. Incubation occupies about twenty-four days, and as soon as one brood is hatched off, it must be removed to the place where it is proposed to complete the process of rearing. It is a great advantage if there be a small stream of water trickling near, but the ground must always be dry. The chicks require no confinement with the hen after the first day or two, and may be left to look after themselves as far as food is concerned, which they will pick up anywhere. It is advisable to note, however, that an abundance of clumps of rushes, sprett, &c., is necessary otherwise the chicks may go hungry. If you have heather near enough, large tufts of newly-grown foliage should be spudded up and brought to the rearing-ground, and the youngsters will duly appreciate it.

The best coop is the large rearing one and run, Fig. 9, page 54. This, in its entirety, is employed the first few days, and the young grouse-chicks are fed within it. Give them precisely the same food as young pheasants the first day or two, omitting, however, the several exceptional articles of diet named as useful stimulating agents. After three or four days the run may be removed, but it is preferable to take off the outside end, and so enable the young birds to run in and out of their own free will,

whilst furnishing them with the protection the run affords against winged vermin. It is also advisable to keep some traps set at all likely points where cats (wild domestic ones), stoats, polecats, &c., are likely to attempt an entry. Every day, or on alternate days, some of the berries which grouse claim as a portion of their food should, if possible, be collected and scattered about where the young birds may find and pick them up. If the supply of natural food be found scanty, as it probably will unless a well-adapted spot be chosen, it will be necessary to provide some artificial food, which may be given night and morning; it should take the shape of that recommended for pheasants at a similar age, with the exception of maize and peas. The broods, as they become older and increase in size and strength, will require more careful watching, consequent on their developing an independence of action which might lead them to roam too far afield by day, and to seek to take up their quarters beneath some bush or tuft of heather or brake by night, instead of finding their way back with the hens to their coops, to which it will mostly be found necessary to guide them, and close them in for the night. Young hand-reared grouse are not subject to disease like young pheasants, but many will often be invalided by such maladies as are brought on by the inclemency of the weather; for instance, cramp, catarrh, and the like. The treatment is as for pheasants. They will, however, die off sometimes in a most disappointing way; this is generally due to unsuitability of the site or mismanagement in the rearing.

As soon as the youngsters have acquired sufficient plumage and experience to fly a short distance, they may be taken away to a dry part of the moor not too thickly tenanted with birds, where they may be turned down at a spot where shelter and food are plentiful, and whence

they may easily reach and mingle with naturally-reared birds and learn the mysteries of grouse life. Broods of young birds so turned away should be visited every day or so, for a week or two, to make sure that they are thriving and not being killed off by vermin, &c. At first, perhaps, a few oats and wheat may be thrown down every morning, in case, owing to inexperience of wild life, they may not otherwise obtain a sufficiency of food.

I am inclined to the opinion that it would be possible to bring Red Grouse into a state of semi-domestication and obtain from them a large supply of eggs, as is done with pheasants. With Black Game it has proved satisfactory and easy of accomplishment, but for Red Grouse reliance is usually placed on bought or exchanged eggs to furnish the regular supply.

I now propose to give particulars and results of some carefully-pursued experiments made during the last two seasons in connection with the hand-rearing of Red Grouse. Speaking generally, it may be said that the system employed is based upon different lines from what has hitherto been adopted by those rearing Red Grouse by hand. The information is contributed by Mr. W. A. Nicholson, of Portobello, N.B., and I think we may regard this original information as a valuable addition to our knowledge of the subject. I give it in this gentleman's own words:—

“Individual efforts to hand-rear grouse have been attempted, and have proved fairly successful, but these have not been worked upon a large scale, and no practical system dealing with the matter has yet been put forward. For many years I have given the habits of the Red Grouse considerable study, and in the following pages a system of rearing the birds is described which has yielded very successful results, and that from the very first experiment undertaken. The first trial was conducted on a plot

of grass land on the sloping side of a hill facing the south-west.

Twenty-four eggs were utilised, and fourteen chicks were hatched and successfully reared. This result was very encouraging to me, more especially as I had often read, and had been told, that grouse would not thrive without heather. The fourteen birds reared never as much as tasted that plant up to the day they were marked and released. Their food consisted principally of clover, grasses, seeds, and Spratt's No. 1 Grouse Meal, and spring water. A fortnight after hatching, the chicks became very partial to ants' eggs (so-called), and partook of large numbers.

Fourteen grouse were netted and housed in a large aviary, which was erected close to a fir-wood, with the object of providing shelter. The aviary enclosed high heather, bell heather, bleaberry, mosses, and soft grass, intermixed with a fair assortment of other less conspicuous moorland flora. The birds during the first week of their confinement were very restless, and at intervals approached close to the meshed sides of the aviary, making efforts to escape by endeavouring to fly up, which it may be stated they were unable to do, as each bird had the primary feathers of one wing cut. When I was approaching with food they hastened to conceal themselves under the long heather shoots, and would not partake of the supply until they imagined the coast was clear.

To remedy their aptitude for flying up, a boarding of wood was put around inside the enclosure, and against the netting, to a height of 3ft. They became more contented when this was accomplished, and soon settled down to their new surroundings. I mention this experiment to prove that the birds, if properly managed, will breed in captivity, because from that lot of birds I had thirteen eggs,

and would no doubt have gathered more only for an unfortunate accident which occurred one night, when a fierce storm of wind uprooted the standards of the aviary and tore off a large part of the boarding, allowing every bird to escape. Although their wings were cut, we only recovered seven of the birds, and heard of two having been killed by a dog three days later at a distance of fully five miles from where they escaped, which conclusively proves the extraordinary extent of their running powers.

The following method I have found to give the best results in rearing grouse, and with the proper care and management necessary, and punctual attendance to the birds during stated periods, I see no reason why, if the instructions are faithfully carried out, others should not obtain the same encouragement by their efforts in the rearing of grouse.

I had considerable difficulty in the procuring of eggs for my series of experiments, and after a great deal of trouble at last succeeded in procuring forty-two, and considered myself very fortunate to get these. Had it not been through the kindness of a gentleman, himself a proprietor of a large moor, I should have been greatly handicapped in getting them at all. These were set under four Buff Orpington hens.

The boxes were stationed outside and against the wall of an outhouse facing the west, the eggs being deposited on heather nests, made up to correspond as near as possible with the natural nest, with the addition of a layer of soft grass between the heather and the ground. In choosing hens for the hatching of grouse eggs, or, in fact, any eggs, care should be taken to see that the birds are healthy and especially free from insects. If this is not attended to before 'setting,' the annoyance by the pests to the sitting hens will cause them to become restless on the

nest, and broken eggs will result. Make sure, too, that hens for setting purposes are not old, see that they possess full wings, clear eyes, and even scales on their legs, and that they have a healthy, well-conditioned look; and, as stated above, examine each carefully for vermin, especially under the wings and under the feathers on the breast. A very wise plan, too, before setting the birds on such rarities as grouse eggs, is to allow them to sit for a couple of days on artificial specimens, and then the best of the hens may be chosen for the important process of incubating the real eggs.

The forty-two eggs yielded forty chicks, three of which were very weakly, but these lived; the other two eggs proved to be bad. The day after hatching they were removed, along with their foster-parents, to a cleared space on the moor, and each coop was fitted with a run 5ft. long, and a little narrower than the entire breadth of the coop, the top of the run being covered with small-mesh wire-netting, and the heather within the run (within the inner circle, see Fig. 28) allowed to grow naturally and without being interfered with in any manner. During the period of sitting the hens were carefully lifted off the nests at regular intervals, namely, at eight in the morning and four in the afternoon, for food and water, and for the purpose of allowing them to indulge in a dust-bath. During the first week of incubation they were allowed ten minutes off the eggs each time, and from the eighth day to the day of hatching an additional five minutes were allowed them. The food supplied to the hens consisted of barley given in the morning, and wheat and rice in the afternoon, including fresh water. The young grouse are very tender little creatures, and the utmost care must be taken in removing them to the heather, which ought not to be undertaken until they are at least a full day old. By that

time they will have become stronger on their feet, and more lively, and begin to take an interest in their surroundings—peeping out their heads to see what is taking place around them. For removing the chicks to the moor there is nothing better than a hot-water carrying-box, which,

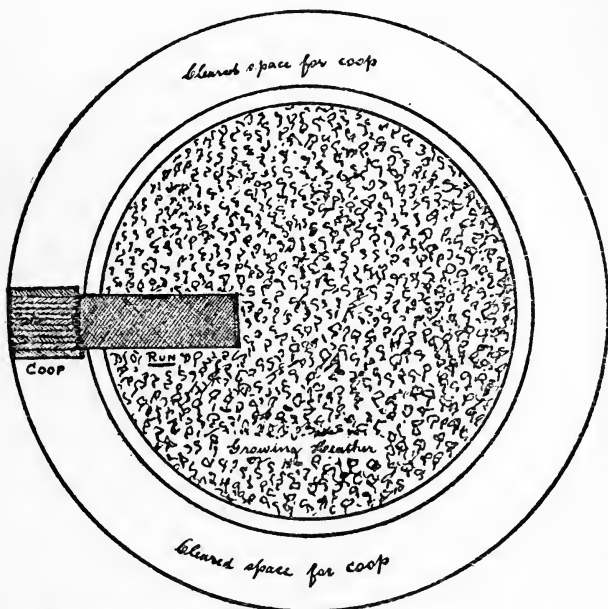


Fig. 28.—Plan showing position of Coop and manner of clearing the heather.

even supposing the distance is short, ensures the birds being kept warm, and lessens the liability of their catching cold, which they are prone to do during the early stage of their lives. Select a circle of ground on the moor, where the heather is not too high, clearing a space on the outside to allow of the coop being shifted round, and allowing the

heather within the run to grow naturally. Care must be taken, however, to see that the heather at the entrance between the run and coop is removed to allow of the chicks having free access to the run. The heather provides the shelter necessary for the chicks, and they feed on the small grasses and insects in a natural manner. The top of the run must not be covered except during very wet weather. A slight shower of rain is beneficial, both for the health of the chicks and the plant-life which retains the moisture. The coops should be removed round the circles every two days, and this ought to be done in the evening immediately the birds have retired for the night. The ground under the coops may be covered with cut hay or grass, which provides warmth, and is easily and quickly removed when the boxes are shifted. Chopped heather must not on any account be put inside the coops, as it becomes mixed with the evacuation of the hens, the young grouse begin to peck it, and scour is contracted, which kills the birds.

The food supplied during the first week was mixed seeds and Spratt's Small Game Meal, containing a sprinkling of 'Crissel,' and beef-suet, chopped finely, every three days. The latter was eaten with much relish, more especially during cold weather. A little lettuce was given every forenoon. On the eighth day the birds were in addition supplied with bruised hemp- and rape-seed and whole dari, and at three weeks the coarser No. 2 meal was substituted for the fine and canary mixed seeds, and a plentiful supply of chopped heather-tops supplied. Ants' eggs, softened in boiling water, were allowed the birds every day, and it was observed the chicks were always very thirsty.

The chicks grew very rapidly and became comparatively tame. At feeding-time they would crowd round and endeavour to use their short wings in their hurry to meet

me. The birds were fed five times a day—at seven and ten a.m., and one, four, and six o'clock in the evening. Just as much food as they would consume was given each time, but a plentiful supply of seeds was always provided. Although the birds were all healthy, they never appeared to be extremely hungry, and the cause of this I put down to their having plenty to eat inside the runs in the shape of seeds and heather. They were very fond of the young sprouting shoots and leaves of the latter, and as they grew older split oats were supplied and greedily eaten. The birds eventually became very partial to the oats, and would eat these and leave the other seeds.

It is most important to observe that everything connected with the rearing of the birds is kept scrupulously clean, especially the drinking-vessels, and I cannot lay too much stress on the importance of providing fresh water, which is, in my opinion, most essential in keeping the birds in health. Renew the water three times a day, and clean out the dishes on each occasion.

I must say that I had no difficulty in rearing the birds, and out of the forty chicks hatched not a single death occurred, all reaching a mature stage and growing an excellent plumage. There is really no difficulty in managing the chicks—they certainly give no more trouble than pheasants—the feeding is much the same, and the rearing is as interesting. It is hoped that a trial of this method in rearing grouse may eventually lead on to greater efforts by those in a position to give the necessary time to the undertaking, and especially would I commend to the notice of grouse-preservers the advisability of experimenting with grouse-breeding in captivity. Much has been written on the subject of grouse-shooting and the management of grouse-moors, but the subject of the rearing of the birds seems to have been almost entirely ignored,

if we leave out the individual experiments undertaken by moorland keepers, who appear to be somewhat reticent in making known the results of their trials. I should be pleased to give any further information which may be necessary, or to help with any further advice on the subject of this chapter. All letters should be addressed to the Publisher, Mr. L. Upcott Gill, Bazaar Buildings, Drury Lane, London, W.C., and marked 'Grouse.' "

With reference to the foregoing valuable contribution to our knowledge of the subject of grouse-rearing by hand, I should like to point out to the reader that Mr. Nicholson's experiments make it clear that there would be no great difficulty in causing grouse to mate and lay freely in captivity under much the same conditions as prove easily successful with pheasants. Furthermore, the fact that all the eggs secured were hatched out, and the chicks reared to full maturity, serves to warrant the opinion that under the conditions described far greater success should attend the hand-rearing of Red Grouse than has hitherto proved to be the case.



CHAPTER XXII.

RED GROUSE : Diseases.

THE conditions under which grouse are preserved are so essentially natural that the diseases to which they are subject are far from numerous, and, with one exception, by no means virulent. They are for the most part incidental to the early life of the birds, or brought about by inclemencies of weather. The epidemic of "grouse disease" proper can only be accounted for by the altered circumstances of existence in over-preservation. Young grouse in a natural state are subject to catarrh, chills, and a species of roup. All these are due primarily to atmospheric conditions. The first-named may occur in the young at any time before reaching the stage known as half-grown. The same, also, may be said of roup; but chills are mostly caught by the very young birds during more than ordinarily wet spring-times on the moors. Very little can be done to aid the youngsters to combat these maladies; indeed, it is questionable if they are not better when left to take their chance. If one be always prowling about looking out for sick and weakly youngsters to convey to the fireside for warmth and comfort, the disturbance to the broods generally must be far more prejudicial than the gain to individuals would warrant.

Drowning out is a common accident to young grouse, and carries off hundreds on some moors, not to mention

the many old birds which fall victims to wet and exposure whilst seeking to protect their offspring. This chiefly occurs on flat expanses of moor, where the soil is of a heavy character and "cakes," with the result that the rain lies upon the surface, accumulating in the hollows, rendering it necessary for the old birds to repair to the elevated spots and brave the wind, rain, and cold, with the alternative of remaining in sheltered places and being half-drowned. The result either way is similar and alike deplorable. Endeavour should, therefore, be made to discourage the nesting and frequenting of birds on such undesirable parts of a moorland preserve.

At certain seasons and upon certain moors there often occurs an epidemic of tapeworm, which carries off hundreds of young birds, and even acts very prejudicially on the old ones, though they seem better able to cope with the malady, and consequently suffer, in respect of mortality, to a less extent. Tapeworm seems always present in some degree of virulence among grouse; but at certain times of the year, and in certain parts, it seems to get the upper hand, and to carry off birds by scores. How it is acquired or to what causes it may be attributed are questions scarcely answerable, because of the peculiarly local character of the visitations. All the birds on one side of a broad expanding hill may be more or less affected, the young die off, some of the old ones follow suit, and those which survive bear an emaciated appearance, testifying to the prevalence of the pernicious parasites; whilst over the brow the birds are quite free. Of course, the visitation does not always show such noteworthy features. It, however, rarely attacks a whole district, but rather small parts of several districts. While, too, it may be present in one season, it is absent in another, although the conditions of climate appear to be precisely similar. The only satisfactory

reason which can be given for its occurrence is that mentioned in connection with the same parasites in pheasants.

The disease (or, rather, diseases) generally classed as *the* grouse disease is, unfortunately, too well known, as far as its effects are concerned, to warrant entering into any lengthy descriptions. Under the general term "grouse disease" three obviously distinct maladies of epizootic form are usually included or confounded. There is, in the first instance, the same, or apparently the same, enteritis, which was described when dealing with pheasants. It is caused and spread by contaminated sources of drinking-water, but is not infectious. Beyond this I do not see that I can add anything to what appears upon this subject under the head of "Pheasant Diseases."

Then there is a form of tubercular disease quite akin to phthisis in the human subject. It is a slow and wasting disease amongst grouse as amongst men, but occasionally exhibits a rapid course in otherwise weakly birds. Finally, there is what constitutes probably *the* grouse disease, an enteric-pneumonitic malady, which usually proves fatal within twelve hours. It is probable that neither of these two diseases is actually infectious, or more contagious than typhoid in human beings, because when grouse pack in winter-time they are, to all intents and purposes, free from it. During the time when the roughest and wettest weather prevails, the birds are freer from disease than at any other; but as soon as the mild and dry weather of the spring-time comes the trouble shows itself.

This is practically all that is positively known concerning "grouse disease." A great deal has been done, and is being done, to acquire positive and connected knowledge upon the subject. The commission which has been investigating the disease may be expected to do a great deal in furthering the knowledge which Dr. Klein's pathological

investigations have given us as to the origin of the malady or maladies ; but it is very probable that until a properly-constituted body can sit down upon a moor and investigate an outbreak from its very inception to its final disappearance, we shall never have a definite pronouncement upon the cause, development, and the means of combating the epidemic.

This being the case, it is somewhat presumptuous to attempt to offer any definite advice as to how to deal with grouse disease. All that can be said is that all dead birds should be burned, all weakly birds killed off, and as small a stock as possible left over for breeding purposes. Much could be done to prevent it by draining in certain defined directions, having reference to the water-supply, because it is practically assured that it is in connection with this that the great epidemics are caused. A damp soil, accompanied by unusual heat, producing a warm, humid state of the atmosphere and surface soil, are the conditions most favourable to an outbreak and the spread of it. It is, however, comparatively local, but when carried to a fresh locality is far more destructive than over the scene of its outbreak.

I am entirely of opinion that over-preservation is indirectly the cause of a very great deal of grouse disease, and agree that over-destruction of certain kinds of feathered and furred vermin exercises an equally, although indirect, deleterious influence. The carrion crows, rooks, stoats, weasels, magpies, and jays, where they exist, should be cleared off with no uncertain hand ; but to the hawks in reason I would extend as great a licence as possible, especially to the larger ones. All the above are determined destroyers of eggs and young chicks, indiscriminately, choosing always the best and healthiest of the latter. To the hawks it is mainly the weaklings and the

already diseased which fall victims, and even if they do destroy a few healthy birds, they are practically contributing to the survival of the fittest in the most salutary manner.

To be perfectly safe, an owner of a grouse-moor should never bring birds from another moor on to his own. There are, however, difficulties at times which render this practice unavoidable when fresh blood is required. Whenever this is the case, eggs should be obtained, which, in view of the larger information now possessed as to the hand-rearing of grouse, has everything in its favour.



CHAPTER XXIII.

RED GROUSE: Protection.

PROBABLY no kind of game offers such facilities to vermin and poachers as Red Grouse; yet in addition it suffers considerably from the molestation of farmers and shepherds of evil intent, who, although practising arts equally reprehensible with those of poachers, yet manage so to veil their malpractices as to keep outside the pale of the law. Whatever may be said as to the wildness of moorlands, and absence of animal life upon their slopes, those who go in for preserving grouse will soon find that animal life is by no means absent, particularly that of a predatory character. Grouse suffers at all times from the attacks of stoats and polecats on the half- and full-grown birds, weasels on the eggs and chicks. The wild cat, which is far from being extinct throughout the less cultivated and barren lands of Scotland, Wales, and possibly the Northern counties of England, also preys considerably upon grouse, and is ably seconded by its once domesticated imitators. In Scotland the fox is for the most part vermin, and does not fail to maintain its character as far as grouse are concerned. In some of the wilder moorland districts the badger is still fairly plentiful, while martens also occasionally give evidence of their presence. Exception may be made in favour of the badger and marten, which are already too scarce in these

islands; and much as we may deplore the damage these animals sometimes commit, yet grace must be extended to them. In districts where sheep share the land with the grouse, and "sheep" dogs abound, much damage will be done by many of these, which go in for poaching game, generally because they are half-starved at home. They are easily trapped, and they should be, not only by reason of their individual malpractices, but because they seem to entice other and well-behaved dogs to share in and acquire the knack of their nightly depredations.

As to winged vermin, the same may be said of their opportunities for destruction as of the furred. Crows, rooks, magpies, jays, all are equally mischievous; but probably the superiority in numbers of the first makes them the worst feathered enemies of moorfowl. Of hawks I have spoken already in the foregoing chapter. I may as well say that I do not hold so evil an opinion, speaking from the game-preserver's point of view, of the hawks, as is usual among gamekeepers, and hope, when I come to consider them as vermin, to put a less unfavourable construction upon the habits of several of these beautiful feathered denizens of our isles.

The two or three weeks leading up to the Twelfth of August provide the most profitable period in the grouse-poacher's season, for, although, of course, grouse-poaching goes on whenever opportunity offers after the shooting season begins, still it is during the week or two immediately preceding that date that the bulk of the netting and snaring of grouse occurs. I know it is not unusual for those interested to maintain that such poaching is so occasional that there is no need to provide against the risk. On the other hand, there can be little doubt that the practice has of late years been on the increase.

Outside the ordinary grouse-poacher, the poaching

crofter, and the dishonest gillie who aids and abets, there is quite another class of more wholesale poachers which enlists the services of such of the crofters who are not above sharing risks and profits, and will, at times, go to the extent of "nobbling" watchers and other of the smaller fry who are supposed to be looking after the grouse in the interests of those who shoot and not in those who poach.

To some extent the iniquitous form of grouse robbery which flourished a few years back has been reduced. The practice I allude to is that of absolute outsiders leasing small farms and moors, "for the shooting," which adjoin large and properly preserved moors and manors, and who simply use these as a centre from which to raid the grouse from the surrounding properties.

The habits of the game-bird which prompt its long, low flights at even-time through the valleys and gullies, alongside the burns and the tarns, provide exactly the opportunities which the poacher with his stand-nets seeks. They are, too, most difficult to guard against, because these evening flights, although of almost regular occurrence, do not always follow the same line, and may, when the movements of the grouse are carefully watched, be frequently deflected into a desired direction by such simple expedients as a man suddenly rising from a hidden position, in itself an occurrence absolutely devoid of suspicion on the part of a dishonest watcher, a grazier, or a herdsman. The stand-nets are erected upon the ground where they have every legal right to be, though, possibly, no moral right whatever. There is no Prevention of Crimes Act in the category of the Game Laws which applies to this practice, and there is always the not entirely remote contingency that the owner or lessee of a moor may stand and watch his birds netted without possibility of adequate compensation. He can do absolutely nothing to restrict or to prevent

possession or erection of stand-nets. He has no right of entry upon these poaching block-houses, and before the Twelfth his only recourse is at law or through the police for unlawful possession. The chances of an adequate conviction are extremely remote, and it therefore results that the only means at the grouse-preserve's disposal are those of prevention and the exercise of an unobtrusive supervision of the comings and goings of persons whose behaviour may suggest suspicious motives. The watching, much more the control of the grouse at this season, and under the circumstances named, is in itself a most difficult matter. The long flights the birds take are so extended and so easily influenced in their direction by apparently chance diversion that it is practically impossible to keep an eye on every covey, or even on a fair proportion of them. The only way to deal with this class of poaching is to meet it on its own ground, or anyhow as nearly on its own ground as you can get.

By observing the centres of suspicion, by carefully watching all such places for which the evening flying grouse may for a time quit the limits of their own moor, and by, if the expression be understood in its proper significance, watching the game watchers, a great deal may be done to prevent the stand-netting of your grouse upon your neighbour's land. Of course the use of the stand-net by the ordinary poacher, where he runs his risk and enters upon your moor for the purpose, is a matter more easily met, and one the keeper and his men should always be able to deal with. The outside gentry do not affect these practices to any great extent, merely inciting to them at the hands of others with a view to the acquisition and subsequent disposal of the game when the coming of the Twelfth permits.

The employment of the sweep-net by grouse-poachers is

a widely-spread practice, and one which repeated conviction and confiscation of the gear do very little to limit. As a rule, poaching with the sweep-net is commenced a few days before the Twelfth, so as to get the birds to market in time for that date, and is worked subsequently whenever the chance offers, but not to any extent after the coveys are broken up and driving is alone resorted to for the shooting. The general mode of operations is similar to that when the sweep-net is used for partridges, but differs in some essentials. The preliminary proceeding, of course, involves the more or less precise locating of the roosting-place of the grouse covey round about the time of sundown. Later on, at the time held most propitious for the work, the exact whereabouts of the covey is ascertained either by means of a trained dog or through careful observation, and the men hauling the net silently approach the birds from the leeward side until they are in position to throw the net over the whole covey. It is of much smaller size than that usually employed for partridges, being but about 15ft. by 8ft. Directly the net is thrown the men fall upon the grouse, killing them through the net by seizing the birds and pressing with both thumbs upon their breast-bone. This mode of settling the capture is expeditious, and prevents the birds from causing an alarm; the mode of killing will not be detected, unless by an expert, as being otherwise than that of shooting, whilst their appearance on the table is identical with that of a heavily shot bird, but minus the pellets. This form of grouse-netting is very difficult to prevent, being practically night work and very silent. Dishonest watchers can and do lend very great aid in its accomplishment by locating the roosting-places of the birds, by land-marking them in previously agreed manner, and by signalling from their coigns of vantage where the birds are located for the night. Only close and

persistent watching can prevent it, and in almost all cases the employment of dogs by the keepers to give notice of the presence of poachers, who otherwise may be neither seen nor heard, is almost a necessity.

Following the opening of the grouse-shooting season numbers of birds are taken in stand-nets by such loafers and poachers as follow, not actually in person, according to their judgment and local knowledge, the shooting-parties, and are able to gauge fairly accurately the directions in which the unhit birds will be returning at evening to the haunts from which they have been driven during the day. For the most part, observation is withdrawn from the shooting-grounds, and as the birds return up the gullies and valleys, and along the water-courses, the stand-nets are raised upon long slender stakes, and in the deepening gloom of the evening capture many a bird which may have escaped the guns.

Grouse are also snared in many ways, but there is no need to describe fully the details of make and mode of application of the several snares and springes which grouse-poachers bring to their aid. These devices have come amongst latter-day keepers to be regarded as old-fashioned and troublesome; but I opine that if their use were better known to the present generation they would the more readily spot them or the signs of their being illegally employed than is at present the case, and so limit the extent of the depredations committed by means of their aid. The snares and springes used for taking grouse are so set as to secure their victim by the head and strangle it, or anyhow to reduce it quickly to such a condition as to render it incapable of causing alarm and attracting attention before it is secured and killed by the poacher. The snares used are much like those usually employed for smaller birds, and the ground-springe and the standing-

springes are both used also. As a rule, the latter will be set amongst patches of high gorse, where it does not show up when sprung. These "engines" are invariably employed in and about the places where the grouse roost, and where they sun themselves in the early morn, when they first get on the move. The snares and hingles are generally laid down at night, but the standing-springes are generally reset when a bird is taken, as the sites chosen for their position protect them from view, except they be actually discovered (rather a remote contingency) by the casual passer, such as a watcher or a keeper would be if not actually looking for articles of this description. There is no doubt that the number of grouse poached in this manner in the few days before the Twelfth is very large, and, of course, as the value of the snares and hingles is practically nil, if the poachers using them come to the conclusion that they are working upon an unfavourable or dangerous pitch, they can easily renounce one lot of tackle and provide other for more favoured localities.

It will be seen that the grouse-poacher has very varied means at his command, whilst the difficulties of preventing them from being employed are, from the nature of the surroundings, much greater than with other game-birds.



CHAPTER XXIV.

BLACK GROUSE: Natural History.

MUCH as *Tetrao tetrix* differs from *T. scoticus* in its plumage, the difference is still more marked in the habits of these two game-birds. The Red Grouse is essentially a moor bird; but although Black Game are, for the most part, found in and near moorland, they are a far more tree-loving bird. Wild, rough, half-cultivated country is what the Blackcock prefer; where the ground is broken, the surface abrupt and irregular, where open moorland alternates with low boggy morass and thick, low covert, plantings or woods; these are the parts of Great Britain—not Ireland, be it noted—where the muirfowl loves to pass its days and multiply its species. It is, however, not a very discriminating bird, and if the march of cultivation has trespassed on its limits, it is quite ready to take up its abode on any odd expanses of moorland, common, or brush, obtruding amongst the cultivated fields, provided the spot be a fairly sequestered one, and its domain be undisturbed. The ideal ground for Black Game may be said to be moorland that has been roughly ploughed and planted, up to the time when the trees begin to kill down the heather, sedge, and gorse. If parts of the ground be swampy, so much the better, in the Black Grouse's estimation; failing this, it will frequent the edges of more

mature wooded growths bordering on the moorland, but this also being denied, it has recourse to the roughest and most thickly-covered parts of the upland wastes.

The Blackcock is found in many parts of Great Britain, where, however, it is not often plentiful, and while adapted to a far larger range of country, it is in no way so numerous as the grouse proper. This is a grievance with me. If the bird be so unexacting as to its haunts, why is it not more generally appreciated? It is in every way a splendid bird of sport, and offering, as it does, so many facilities to the preserver, in both habitat and ease of hand-rearing, I am surprised that it is not more preserved. On every moor in the kingdom, from John o' Groats to Land's End, the Blackcock could be raised, and on a great many other places besides. Take one, for instance, Dartmoor, where thousands and thousands of acres are to be had almost for the asking, and scarcely any Black Game present, whereas formerly it abounded, but it has been killed and driven off rather than died out. And there are many similar cases. We had nearly lost the Capercaillie, and ere long we shall have let most of our stock of Black Game run out too.

The yearly course of the Black Grouse's life varies very considerably from that of the Red variety. In the months of March and April—earlier or the reverse according to the season—the packs in which the males have associated themselves during the winter are broken up, and each bird prepares for breeding, the habit being polygamous. A good deal of fighting goes on for the possession of certain much affected sites, and the old cock birds, as a rule, are superior in point of prowess to the young ones. Consequently, it is well that the old cocks should be cleared off as far as possible during the season, leaving the young ones opportunity to breed without hindrance.

The nest is decided upon in April ; it is of very primitive construction, consisting merely of a circular hollow in the ground, indifferently lined with such morsels of herbage as may be brought in by the bird. It is generally placed in a tuft of heather on the open moor, at a spot well sheltered and dry, yet near to water ; sometimes in a low, young plantation, at the base of some thick shrub or bush. I have also known it in a low hedgerow. The eggs, from three to thirteen, but averaging seven or eight, are laid invariably towards the end of April, difference of locality and season apparently not influencing the matter. It is said that the hen Black Grouse or Grey-Hen neither " lays nor incubates till three years old " ; but this is incorrect, and though perhaps both sexes of the Black Grouse are longer in reaching maturity than their Red congeners, I have every reason to believe that at two years, and even one year old, the females lay and incubate.

As soon as incubation commences, the cocks desert the hens, and again congregate in small packs in quiet and secluded parts until the process of moulting, which now begins, is completed. The whole work of rearing and protecting the young is left to the female bird, and a very assiduous parent she proves herself, taking every care and pains over her progeny, and being always ready to risk her life in endeavours to distract attention from them. The young remain with the mother until autumn, when their first feathers are moulted off, and the birds acquire the full plumage which distinguishes the males from the females, between which there is till this time no difference in outward appearance. The broods are then split up, the old and young of each sex associating together apart from the rest. The males " pack " to a much more considerable extent than the females, often as many as fifty or more of the former being occasionally seen together, while the

hens limit the number of theirs to about thirty. It must not be imagined that each and every bird joins these packs ; on the contrary, a considerable number prefer to remain in couples, threes, and so on, and I have repeatedly noticed males and females together in these coveys.

The Black Grouse is somewhat eccentric in its habits, passing from part to part of a locality with extreme irregularity, and seemingly quite indifferent to both season and weather. But these game-birds are very chary of disturbance and danger, and prefer at all times the most open places, only seeking shelter when compelled to do so by stress of weather and want of food. Blackcock rarely visit plantations, low coverts, &c., which afford the more protection to the sportsman and natural enemies of the birds, unless induced by thick or stormy weather.

This game-bird is an early riser, always running the sun very close. During the day it moves outwards, if possible, from the signs of human existence, or retires to the high and exposed parts of the estate, except, of course, in winter, when oftentimes the whole day is taken up in the search for food. This consists for the most part of the leaves, flowers, shoots, and seeds of many kinds of sedge, chickweed, and ranunculi, leaves of some few shrubs and bush growth, and the shoots and berries of the whortleberry, cranberry, cowberry, and bearberry, and the tender shoots of heather ; besides these the shoots and soft needles of firs, fronds of ferns, and grain in stubble fields, are all much enjoyed. During winter the range of food is considerably restricted, and often the supply is so difficult to obtain that the birds have recourse to the cultivated fields of the farmer, when hunger makes them often very tame. Black Grouse should always be provided with corn, &c., during very hard weather.

CHAPTER XXV.

BLACK GROUSE: Preserving.

As I have said, although the Red and the Black Grouse have much in common, still they differ in many respects, and under no circumstances are these variations more conspicuous than when their preservation is attempted. The most striking characteristic of the Black Grouse is its aversion to the sounds of human bustle and industry. When the preserving is taken up this becomes a serious matter, and unless one can guarantee quietude and the absence of regular and continued disturbance, the birds will not remain and increase; consequently, the first consideration in reinstating a head of Black Game must be the suitability of the ground. From the foregoing chapter may be learnt all that is necessary as to the topography of a site, but the question of quietude is almost equally important. Possibly, some large expanse of land, such as a common, moor, or down, adjacent to and upon which are some number of more or less advanced woods and plantations and copse, may be available. It must be free from the grazing of sheep and cattle and their attendant disturbances; from the constant crossing and recrossing of persons at all hours of the day, and, perhaps, night too; and from the continual raids of packs of harriers and foxhounds. These conditions are a *sine quâ non* of Black Game preservation, and unless they are

attended to, a fair head can never be kept up, although by great endeavours a sprinkling of birds may be temporarily established, quickly to dwindle down, and eventually to disappear.

Bearing these provisos well in mind, the preserver should set about securing for himself the nucleus of a stock from which to build up a head of heath-poults. Two ways are open to him—either to turn away part- or full-grown birds with a view to their introduction, or to go in for hand-rearing a number of young birds. The first course means the purchase of a large number of, say, well-matured but not old birds at a moderate price, and risk attendant on the enterprise. There is little difficulty in obtaining birds and eggs from reputable Continental sources. With regard to a good many matters of Black Game preserving, the remarks in treating of Red Grouse hold good, and I shall, for the moment, devote attention to the hand-rearing of the Black Grouse.

In the case of pheasant-rearing, I found the diseases to which the young chicks are subject to be the usual cause of failure, and although in the case of Black Game it is not exactly disease that produces the ill-success, still it is when the chicks are at a tender age that the crisis is reached and that they are found difficult to treat satisfactorily. Up to the time when the eggs are hatched out, the instructions given for Red Grouse-rearing hold good, but in the matter of food during the first week or so a distinction must be made. The chief food Black Game chicks consume for two or three weeks is the seed and small flowers of a small rush, termed the "spret" or "sprit," which grows very thickly and closely on moorlands and commons, lone copse, &c., near and in boggy parts. Unless the coop with the hen and chicks can be allocated a dry piece of turf near some small stream of

water where the spret is abundant, but poor success may be expected. For the rest, the several styles of feeding recommended for Red Grouse are applicable, and if a good supply of spret-seed can be procured, it ought to be given as part of each meal. Besides this, much depends on choosing a good site whereon to place the coops and broods. I know no better than a low, rough meadow with a small stream of water running through it, and along which there is a fair cluster of low brake, such as bushes of hazel and thorn, brambles and bracken, &c., or failing this, the sides of a sheltered mire, if in wooded ground so much the better. Although the chicks like to get about amongst the growth upon damp, wet places, they cannot stand rain and moisture in their coop; consequently it is necessary to watch them carefully at first, moving the coops whenever they appear to require it. After the broods are about three weeks or so old, they commence to gather strength and independence, and they should be left to their own devices, as much as possible, to procure food, until they are sufficiently matured to turn away, when they should be capable of providing their own sustenance, and soon be able to wing a lengthy flight. It is advisable to get the birds well out to quiet, undisturbed places before turning them away, otherwise they will stay about the place where they were reared to such an extent that when, next year, being fully grown, they seek to breed and incubate, they will possess many of the habits of semi-domesticated birds, with all the inherent wildness of moor-bred ones, and so, many nids will be lost through the desertion of the hens. As it is particularly necessary that Black Game, hand-reared, should not be turned away till well able to fly, it is advisable, rather than confine them, to cut the wings, first one and then the other, or to secure one wing at alternate intervals by tying it up

in the approved fashion. The maintenance of a stock of Black Game is effected by the same procedure as that necessary to introduce a supply ; and an increase of the existent stock is only to be expected if the birds be kept free from disturbance, be looked after in winter, and be on a favourable estate. In these respects a good deal of what has been written regarding Red Grouse holds good of the Black Grouse also.

Black Game are not much exposed to poachers, but there are several causes besides vermin which may contribute to their diminution. The burning of the heather is one very fruitful cause, late hunting another.

The vermin which are chiefly injurious to Black Game are, for the most part, the same that destroy Red Grouse. The diseases, of course, are very similar, if not identical ; but as far as my experience goes, grouse disease proper is practically confined to the Red Grouse ; and although Black Game sometimes die off in large quantities, still it is not always, in fact very rarely, from " the epidemic " which destroys the moor-fowl of the Highlands and North of England moors. In southern parts of the country, where no Red Grouse exist, the Black Game sometimes suffer very considerably from the same diseases which affect partridges.

Though this game-bird is one not easily poached, and one which alone does not pay for being feloniously killed, yet a good many are got by those who go in for hare-poaching and moor-fowl snaring and netting. It is a bird easily snared and easily trapped, where it exists in any great number, and both practices are often indulged in.

The food of both grouse and Black Game bears so great an influence upon the general health of the stock, and is at times so difficult to provide of the nature and in the quantities necessary, that very severe losses are incurred.

The great point is to make provision beforehand. As a rule, when severe weather sets in the birds come down from their ordinary haunts to those places where the likelihood of finding food is greater. This, then, provides a guide as to where the necessary food should be forthcoming. The expanses of grouse-moor are so great, the distances so long, and the means of rapid communication so difficult, that, unless some sort of provision is made beforehand, when the dire necessity arises, numbers of the game-birds will be starved or frozen to death before food can be placed within their reach.

Under these circumstances, then, and with a view to meeting any emergency, the provision of food-shelters and depôts in huts before hard weather sets in is the surest way of dealing with the matter. The subject is too large to be dealt with in detail in the present work; but the principles as applied to Red Grouse are those which must guide those who require to feed this class of game-bird in winter.

Black Game, by their habits, with their greater affection for the woods and those boggy places, mires, and swamps which even in very hard weather always remain partially open, and afford a certain amount of food, are less difficult to deal with, but, on the other hand, are more frequently neglected. The general idea in connection with Black Game is that if some few patches of late oats be grown in the neighbourhood of the moors or woodlands that they frequent, it is sufficient for the requirements of the birds. Such, however, is far from being the case. These late oats only serve for the first few weeks of early winter: it is during the later portion that scarcity of food makes itself most felt, and it is against privation during this period that the chief steps should be taken. Black Game at such season always seek their necessary food, as well as

shelter from inclemencies of weather, in those places where probability points to its being obtainable. This in itself furnishes the best guide as to where the winter feeding can take place. To this end small food-shelters, such as I have described for pheasants, should be put up, with oats and barley, buckwheat, and millet as the grain provided. Black Game—and Red Grouse too—ininitely prefer the grain in the straw, in which form the food is best given. With the birds coming, as they do, to seek it, the difficulties of providing it are not great, and it will be found that in the case of Black Game careful and considerate feeding during the winter months will well repay itself by increased and healthier stock at shooting-time.



CHAPTER XXVI.

PTARMIGAN and CAPERCAILZIE.

OF the three divisions of the United Kingdom, Scotland alone is any longer able to boast the ptarmigan among its game-birds, and even there it is only the more northern part which can count the bird as its own. It is annually becoming scarcer, or rather more limited in the range of uplands it frequents, consequent upon the progress of stock-keeping among the mountain parts it haunts. As far as preserving goes, it is beyond control, for although far from possessing the wildness and fear of man of the Red and Black Grouse, it brooks no encroachment upon its domains. Hence the chief requisite is to guard its haunts from intrusion and disturbance in order to secure the remnant of the race, for the birds appear to be well able to cope successfully with their natural enemies, of which they have but few in the localities they frequent.

The natural history of the ptarmigan is of considerable interest, chiefly by reason of the change of colour which comes over it prior to the approach of winter, when it assumes, in place of its summer plumage, which mostly resembles that of the Grey-Hen, one of almost pure whiteness—a phenomenon which we further see in the Mountain Hare, the stoat, &c., and which is of use in affording the bird or animal so characterised greater immunity from the extremes of cold associated with the exposed regions it

inhabits. The haunts of the ptarmigan may be described as the highest, most barren and stony of all the mountain districts of Scotland, north of the Grampians. They seem to choose the parts most exposed and showing least signs of verdure; indeed, anyone unaccustomed to the habits of this bird would consider it impossible for it to find sustenance on some of the expanses where it is most plentiful. There is no need to notice here all its habits, and to detail the points in which it differs from the grouse, for to all practical intents the mode of life is the same in both. Game-preserving can hardly be made to reach these birds, although they are game, and highly esteemed as such by many sportsmen who are great enthusiasts for ptarmigan-shooting.

To the capercailzie, however, the game-preserved may with great benefit extend his sheltering arm, for, in the absence of that protection, it had already once become extinct here; but, thanks to several ardent admirers of this noble game-bird, it is once more reinstated in our preserves. Still, it will want much considerate care before again becoming fairly general as a bird of sport. It may therefore be not uninteresting to recapitulate the history of its re-introduction.

It was in 1827-8 that an attempt was made for the first time after the complete extinction of the bird to re-introduce it, but it failed, and not till 1837 were any serious endeavours repeated. Under the directions of the late Sir Thomas Buxton and the late Mr. L. Lloyd, a number were imported from Sweden and turned out in the woods at Taymouth. Rearing by hand was, at the same time, tried, but practically failed. In 1841, however, eggs were hatched under wild Grey-Hens, chiefly in the woods of Drummond Hill, and this mode of rearing, coupled with subsequent successful hatching under fowls

and hand-rearing, resulted, in the year 1865, in the Marquis of Breadalbane counting some 1500 head upon his estate. From this centre the breed has increased and become fairly plentiful all along the Valley of the Tay as far as Dunkeld, the estates of the Duke of Atholl and Lord Breadalbane being peculiarly suited to the habits of these birds. They have now extended, in greater or less number, into the surrounding counties, and eventual abundance in all suitable parts of the country should be only a question of time, interest, and money.

I have been at some pains to ascertain the present position as regards numbers and increase of capercaillie in Scotch forests, and no doubt the information will be of interest. In Kinross and Fife there are fair numbers, in Perthshire and Inverness they are plentiful and increasing, and in Argyllshire there are fair numbers, which are extending southwards. In Kincardine, however, they have decreased since 1900.

The capercaillie is essentially a bird of the woods, although not by any means confining its life to an existence in the trees. The greater portion of its time is spent beneath the boughs, but during cold and snowy weather and at night-time the bird perches, and prefers to remain amongst the branches. It is shy, and mostly seeks safety by running, so that its chief quality as a bird of sport lies more in the difficulty of getting near it than of shooting it when seen. Its haunts are typical of the country from which it has been re-introduced, namely, Norway—among the thickest parts of beech and fir woods, in the wildest, rudest brake-grown sides of the deep valleys through which many of the Scottish rivers meander.

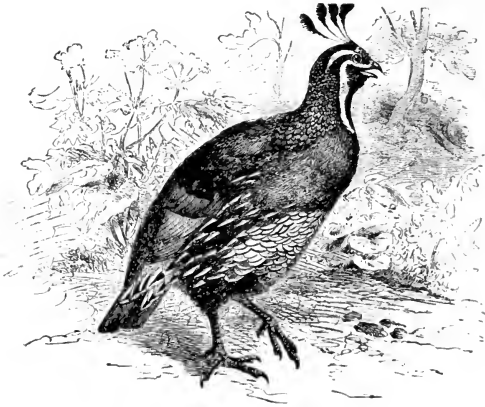
In the early part of April the first pairings are commenced, and a month later the nesting takes place. The nest is made upon the ground, generally beneath the

shelter of some thick bush or tree, and among long sedge grass or heather, and is a rough structure after the manner of the Black and the Red Grouse. The eggs number from four to eleven, and require thirty days to incubate. The hen alone sits, the male keeping guard. The young are looked after and protected by both parents for some time; but the cock bird leaves the brood first and the hen subsequently, generally when winter makes known its approach. The capercaillie is monogamous.

These game-birds have very similar food to that of the Common Grouse; chiefly may be enumerated the several sorts of cereals, when obtainable, black-, cran-, and juniper berries, the leaves and shoots of fir, the buds of the birch and willow and several other trees, and a fair amount of insect-food. The young require various insects, chiefly ants, and worms.

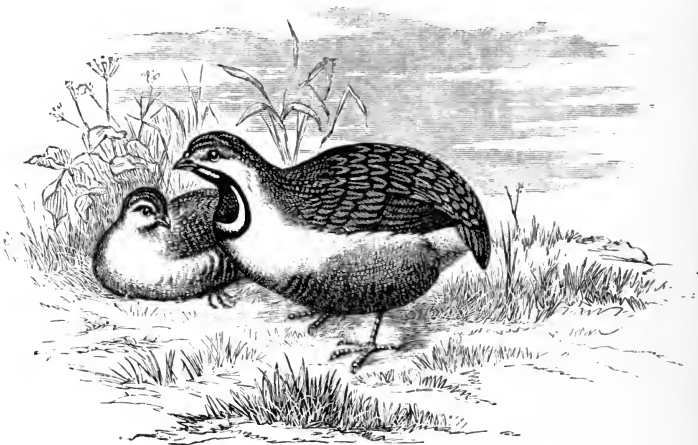
Further particulars are unnecessary here; but I venture to express the hope that all who can will endeavour to assist to the best of their ability the eventual re-introduction of this fine game-bird throughout all those parts of the British Isles which are suitable to its existence. Our list of game, both furred and feathered, is already small enough, and we certainly cannot afford to curtail it.





CRESTED QUAIL.

A hardy and attractive species which might be made the subject of attempted acclimatisation. It thrives, but rarely breeds, in captivity.



CHINESE QUAIL.

A species recommended by those who have experience of it as suitable for introduction in British coverts. It is hardy and more partridge-like than the Common Quail.

CHAPTER XXVII.

QUAIL, LANDRAIL, BUSTARD, SNIPE, and WOODCOCK.

NEITHER of the five birds whose names head this chapter is, strictly speaking, "game," yet for all individually and collectively the sportsman is required to take out a game licence before he can legally shoot them. Such being the case, they demand notice in this work, although the extent to which they may be preserved is somewhat limited, particularly in the cases of the snipe and woodcock.

Quail.

Of late years the quail has been a far less frequent visitor than formerly, and even in the Eastern counties its peculiar cry has almost ceased to be heard. When quail extended their migrations to greater extent to these islands a far greater number bred here and some remained. This, however, appears to be becoming less and less the case, and it looks as if we are likely to lose the bird altogether unless the migrations should again extend to Britain in increasing numbers.

It is very questionable if it be possible to do anything in the direction of introducing quails for sporting purposes, and, if so, of overcoming their migratory instincts, which are very strong. It is generally conceded that quails will not breed in confinement; but I do not think

that a serious and well-planned effort has ever been made to achieve this end. Possibly something akin to the Continental system of rearing partridges might be made to overcome all the difficulties attached to dealing with a game-bird of the quail's peculiar nature. It appears impossible to overcome their natural wildness or opposition to domestication. I have had them in confinement myself under varying conditions, both in this country and abroad, but always without in any way being able to say that they were any tamer after a year or so than when first shut up. I have, however, remarked that they show little or no signs of increased restlessness when the migratory time comes round, and the birds will answer one another at mating-time. Possibly, therefore, if confined under such conditions as those above named, there is a remote possibility that they might mate and brood.

Of course, in dealing with a bird of the character of the quail, what can be said about it as a British game-bird applies largely to what was, or what may be, because, as before mentioned, it occurs on the whole in decreasing numbers every year, occasional seasons, however, witnessing a fair sprinkling in portions of the Eastern counties.

If kept for a short time in confinement—the closer the better—and then turned away, a certain percentage will mate up and brood, and of the resulting progeny some, if not shot, will remain; but the migratory instinct is very strong, and it would be hard to get rid of to any positive extent. In habits it is somewhat similar to the Common Partridge, choosing either the same localities or those with similar features, avoiding, however, to some extent, such higher lands and wet, marshy parts as the partridge sometimes frequents. It is, moreover, a bird which spends its whole life upon the ground, and finds its food, which is similar to that of the partridge, in the same way. It

differs, however, from the partridge, inasmuch as it is very unsociable, and exercises its pugnacious propensities at every opportunity.

The quail is generally supposed to be polygamous ; but this is certainly not the rule, and, in general, it is monogamous, but frequently is not. The pairing occurs at different times in the spring, as the birds have wintered here or not, those remaining with us being from three to four weeks earlier than the larger portion, which only arrive in this country about May. The nest is a very unpretentious structure, being merely a slight hollow formed naturally or by the bird's scrapings in the soil, and containing such dry leaves, &c., as may accumulate in it. The eggs vary considerably in numbers, and although from twelve to twenty are laid, a somewhat poor percentage seems to result in mature birds. The female carries on the process of incubation alone ; but the male remains in attendance, on and off, meanwhile. This occupies about twenty days, and the young run and feed as soon as they leave the shell, which is towards the middle of July.

The food of the quail is very diverse, and its presence is valuable to the arable farmer, as will be seen when the following list is scanned through : The seeds of the chick-weeds, vetches (wild), *Persicaria* dock, plantain, orache, rushes, and spret, the more succulent green portion of these and many other plants, grain in very small quantities, slugs, and ground insects of all sorts. The quail is a fairly hardy bird ; indeed, considering the semi-tropical parts from which it mainly comes, it is uncommonly hardy, but it becomes very poor in winters when there is much snow. As a bird of sport it is frequently under-rated ; but those who have experience think otherwise. If one has a sharp, bustling dog, quails get up quickly and well, and are not an easy mark.

Landrail.

This is another migratory bird, with a seeming disposition to remain and winter here if possible. It arrives about the first week in May, but sometimes earlier, the Southern counties coming in later, curiously enough, than the Northern ones, for their share. As a game-bird it is of poor value, being very averse to flight, always seeking protection, if possible, by dodging about amongst the corn and long meadow grass it loves chiefly to haunt. It is a shy, fearsome bird, and practically will not become domesticated. As far as preserving goes, it lies outside the pale, but affords some little sport now and then when one is beating for partridges, and is a fairish bird in respect of gastronomic qualities. It is not to be encouraged on partridge-land, being, by reason of its habits, very injurious to the working of setters and pointers, where birds are killed over dogs.

Bustard.

Of late years this bird has been the subject of some well-deserved and well-intentioned efforts to rehabilitate it in those districts where it would appear a fair chance offers for some success in this direction. As far as anything of the kind can prove successful, these efforts have been so, and the birds have remained and nested. The circumstances, however, which are absolutely necessary for a fair measure of success appear wanting, and I very much doubt if anything tangible can result, although a certain favourable outcome may attend persistent and well-protected efforts on those lands which can offer the absolute freedom from disturbance the bustard demands.

Snipe and Woodcock.

Although regarded by the law as game, and considered and treated as such by the greater number of

sportsmen, both of these species are mainly migratory ; consequently they do not come under the game-preserve's protection more than as regards securing their immunity from molestation by poachers and vermin. This, of course, is provided for in connection with other game. Nothing, moreover, can be done in the way of providing increased inducement for the flights, so-called, of these birds to remain in and about particular spots and localities, beyond the mere maintenance of their favourite haunts free from disturbance except by sportsmen.

Of the snipe, even more than of the woodcock, it may be said that a much larger percentage remain in these islands for nesting than is generally supposed, and of the latter I am inclined to think that the number which does so is annually upon the increase.



CHAPTER XXVIII.

WILD DUCK : Introduction.—Rearing.—Maintenance.— Protection.

THE rearing and maintenance of wild duck upon any ordinary preserves where the conditions obtaining are favourable to so doing is becoming so general that no apology is required for introducing the subject as a portion of the practice of the modern game-preserved. I do not, however, intend to deal with it except as subsidiary to game-preserving proper, as the control and management of great wildfowl preserves, decoys, and the like are matters beyond the scope of the present work.

The gradual but steady annual decline in the number of wild duck frequenting almost all of the practically numberless places that possess attractions for these waterfowl has led of late years to the adoption of the practice of rearing them under somewhat artificial conditions. In such places, and upon estates that offer sufficient expanse of waters and ground where wild duck chiefly delight to congregate, there is very little difficulty either in establishing them or in retaining them after they are established. When, however, the expanse of water or limit of waterways, with adjoining characteristic land, is limited, then the semi-artificial conditions under which wild duck must be raised and managed add considerably to the difficulties. As a rule, however, such difficulties are easily overcome, and under careful and considerate treatment wild

duck may be freely reared and retained in places and under conditions which to the ordinary mind would appear quite impossible. Of course, where the surroundings are such that under natural circumstances wild duck would breed and increase of themselves, requiring only that freedom from disturbance and quiet which the entirely wild birds seek, there is nothing to prevent them from multiplying of themselves to any reasonable extent. Their numbers can in such cases be increased also by means of hand-rearing and turning away additional ducks. It is not, however, my present purpose to deal with the question of wild-duck rearing under these conditions, but under those which upon the face of it might be regarded as in a great measure unfavourable or unsuited to the purpose, but which in effect offer very little difficulty to a successful outcome.

Generally speaking, those who attempt to rear wild ducks and maintain them upon such small waters and lands as are at their command, find the chief difficulty to be that of retaining them for their own sport or amusement. As a rule, it is not so much the unsuitability of the place chosen for the ducks as the mode of treating them after they are reared which contributes to this undesirable result. Consequently it will be apparent that it is in the system of managing the wild ducks that most of the secret of success lies. Of course a good deal depends upon having a suitable "place" for them; but, as a rule, such is easily found, although it is necessary to point out that the conditions under which wild duck can be retained and augmented in great numbers are vastly different from those which obtain under other circumstances, and it is precisely in applying the system which is successful in the one case to those of the other that disappointment and failure are brought about.

It is scarcely necessary to enumerate in detail the various surroundings which go to make up a suitable place for rearing and retaining wild duck. Wherever there is reasonable freedom from disturbance, such places as possess larger or smaller expanses of the moist and marshy ground to which wild duck are attached, together with one or more sheets of water of even very moderate extent, it is possible to rear and to retain these waterfowl. Naturally, the features of the neighbouring country must be of a character agreeable to the duck, and the mere possession of a small pool lying in a hollow, with dark and sombre surroundings, is not in itself of sufficient attraction or suitability to warrant an attempt being made to maintain wild duck thereon. These birds possess a natural disposition to roam somewhat far afield; but, on the other hand, they cling closely to their home and feeding-place, provided always that it possesses the natural attractions. These may be summed up as reasonable quietude from March to September, a fair-sized sheet of water, with some other small waterways connecting with or adjoining it, and a certain amount of marshy ground, tolerably well clothed with reeds, rushes, flags, and other marsh-growth, such as are suited to these waterfowl.

Wherever the foregoing conditions are existent, wild duck may be reared and retained in numbers suitable to the extent of the water and lands available. If the place or places be exposed, and in no way shut in by trees or woodland, they are less favourable than if there be a good surrounding growth of willow and other trees and shrubs which flourish in damp soil and situation. It will be seen that the conditions favourable to the maintenance of wild duck are forthcoming in almost innumerable instances, so that the extension of wild-duck rearing presents no great difficulties, and has much to recommend its increased

adoption, even upon quite a small scale. It is remarkable to what an extent wild duck may be introduced and retained upon any such preserves where facilities offer for the practice.

There are two modes by which wild duck may be established upon suitable ponds or lakes, where hitherto they have not been in evidence, except in the case of passing birds or occasional ones which may have temporarily taken up their quarters. In the one instance, mature birds are put down under semi-restraint; in the other, wild-duck eggs are hatched and reared under foster-hens, thus forming a nucleus of a future breeding-stock.

When mature birds are turned down, a few or a quantity are obtained in the necessary proportions of drakes and ducks, and, having been previously pinioned, or had their wings cut, so as to prevent any lengthened flight, they should be turned away during the month of March; the latter end is preferable, and it is best to put them down in the dusk of the evening, and feed them there and then, after having kept them confined and without food from six to eight hours previously. They will then settle down for the night, feeding freely, and remain quiet during the following day. As to the mode of feeding and kind of food, these will be dealt with later on. Sufficient to mention that wild ducks should under the circumstances be chiefly, if not wholly, fed at night-time. If left thoroughly undisturbed, the ducks will soon accommodate themselves to the surroundings and nest in due time. Wild ducks lay about twenty-four eggs in a season; but it is best in the circumstances named not to attempt to collect any eggs, or to hatch out and hand-rear the ducklings, but to leave the birds turned down to their own resources.

The chief consideration when it is desired to rear wild

ducks by hand is to make sure that the eggs are really the produce of wild ducks of pure strain, and not of those possessing any taint of tame blood, because if the latter be the case the offspring will not rise in flight properly, and possibly be loth to take flight at all. Of course, if the ducks are merely intended for an ornamental water, or anything of that kind, this does not greatly signify; but where they are desired, wholly or partly, for sport, it is a very necessary consideration.

When the supply of eggs for hand-rearing purposes is obtained by picking up a few nests of actually wild birds this possibility does not occur; but when the eggs are obtained from a game-farm or other similar source, it is advisable, in order to ensure having eggs of undoubtedly wild birds, to inspect the stock before purchasing. The difference between the pure wild duck and crossed birds is quite apparent to even the unpractised eye. The former are much more neatly built, trimmer, and more active birds than the latter, which always exhibit more or less of that clumsiness of build and movement that differentiate tame ducks from wild ones. A difference, too, is discernible in the eggs, those from ducks crossed with tame ones usually running larger, and not possessing the attractive green colouring found on those of true wild ducks.

Upon the point of the fertility of purchased wild duck eggs it is only necessary to remark that, as a rule, when secured from a trustworthy source, there is little or no complaint to be made on this score. Of course, where it is proposed to continue the rearing of wild duck from year to year, a certain number of ducks can be retained for laying purposes, and a sufficiency of eggs provided without recourse to outside sources of supply.

The eggs, which should be available from the middle of March, must be hatched out under foster-hens or in

incubators, and, although they do well enough from the latter, the better results appear to accrue from broods hatched out under the more natural conditions. The foster-hens employed should be well feathered, compact birds, with clean or scantily-feathered legs. According to the size of the hens, from thirteen to seventeen eggs should be placed under each in separate open-bottomed nesting-boxes possessing plenty of ventilation, but at the same time warm and well protected. The hatching-hens and eggs do not require any special treatment, and if handled as if the eggs were those of pheasants all will be well, provided the eggs are thoroughly but not excessively damped immediately before the sitting-hen returns to them after being fed and exercised. The best way of damping the eggs is with a sponge of fine texture, and if the weather be very cold it should be done with water which has stood indoors for a few hours previously. Incubation occupies twenty-eight days, and when the ducklings commence to hatch out a portion of, but not all, the shells should be removed until such time as the whole hatching is complete. The ducklings must be left a few hours with the foster-hen until they have acquired sufficient strength, when they, together with the hen, should be placed in a suitable coop, and removed to the rearing-field.

Success in wild-duck rearing depends a good deal upon the selection of a suitable and favourable rearing-place. According to the number to be reared at one time so the size must be regulated ; but it is easier to err on the side of too little than too much room. It is customary with some of those who practise the hand-rearing of wild duck to devote a separate pen to each brood ; but while the system possesses some apparent advantages, it is not to be recommended where any quantity are reared at one time. Far better results are obtained from the provision of a

properly-secured rearing-field. To this end a suitable expanse of old but fruitful pasture or dry meadow-land should be secured. It must not be exposed to cold easterly or north-easterly winds—if that be the cold quarter, as it invariably is—and whilst being of a moderately moist nature, must at the same time be well drained. The space necessary can be gauged from the fact that the rearing-coops should stand from 6yds. to 10yds. apart each way; the more numerous the batches the greater the distance apart to be allowed. The rearing-ground must be securely fenced in with wire-netting, not more than 1 in. mesh, and standing 4ft. high. The smallness of mesh is required at once to keep in the young ducklings and to keep out small four-footed vermin. Iron standards are preferable to wooden ones, as fitting more closely to the wire. When wooden are used, the ducklings not infrequently jam themselves in the corners formed between wire and wood. If expense be not a very serious consideration, sheet-iron may with advantage be fixed along the bottom to the height of 1ft. For the ducklings during the earlier weeks of their existence, water for the purpose of swimming must be denied them; but if the site for the rearing-field can be so chosen as to include a small pond, which is temporarily fenced off, it may sometimes prove advantageous; but the considerations afforded in this respect are not important enough to warrant special expenditure upon the formation of an artificial one. Where large quantities of wild duck are reared, a small portable hut should be provided, if the rearing-field be any serious distance from a building where warmth and shelter are obtainable, and it should possess a small stove to burn oil. The hut is always useful, if not a necessity, as it serves for the purposes of preparing the food, &c., and for the care of weakling birds,

as well as a watch-house, where winged vermin are likely to carry off the small ducks.

The rearing-coops (Fig. 29) should be constructed with a due provision of warmth and ventilation without draughts. The size approximately should be 2ft. wide by 2oin. deep, and from 2ft. slanting to 15in. high; they must be provided with a wooden flooring, and means for closing them up at night, but the shutter or door, whichever it be, must not reach quite to the top, but leave an inch or so margin for ventilation purposes. No ventilating-holes should be bored in the sides of coops for the purpose named. In addition to the coops, a number of suitable wire netting-covered runs, about 6ft. long and not less than 9in. high, must be provided to confine and protect the ducklings in their very early days. It is not necessary to have a run for every coop, as their use only extends to a week or so, and as the hatches come off in relays one set of runs serves for several sets of coops. As soon as the young ducklings are fit and strong enough, they must be removed from the hatching-pens to the rearing-coops, and be placed and shut up in the latter for a few hours or overnight, as the case may be, before being allowed out in the protecting run.

The nature of the food given and the manner of giving it have more to do with the successful rearing of wild duck than almost anything else in the treatment meted out to them. These remarks apply as much to the feeding of the young ducks as to that of the birds when nearly or wholly matured. It is necessary then to bear in mind that as the proper modes of dealing with the one and then the other differ widely, it is very important, in order to command success, to give the matter particular attention.

When the rearing of wild duck was first undertaken, it was considered that if the ducklings were fed in the same

manner as the progeny of the domesticated duck all must be well. It has been found, however, that such is not the case, and that special food is necessary. There is no doubt that such special food is best obtained from those recognised firms who, after careful experiment, under expert advice, have produced meal particularly suited to the purpose. In the end this food always proves cheaper than any which the amateur may make up at home, and, both on this score and that of merit, is best suited for adoption.

It must be remembered that ducklings, wild or tame, possess voracious appetites, and require frequent and plentiful feeding. The food provided for the first two or three weeks should consist of one or other of the special wild-duck meals supplied by those firms who prepare them. The meal must at first be given in a crumbly condition, and slightly warm from the scalding with boiling water which it requires. As a rule, this meal by itself is considered sufficient ; but it is preferable, however, to supplement it with the addition of chopped hard-boiled egg, or, what is better, a properly-prepared custard, made in the manner recommended for pheasants. There are some disadvantages attaching to hard-boiled egg, which, unless given exactly fresh, is liable to produce ill-effects. It is not necessary to detail them, as the custard I recommend obviates anything of the kind.

The ducklings should be fed four or five times a day for the first fortnight. They should be let out about an hour after daylight, and receive their first meal then, the others following at intervals of three, extending to four, hours. Of course, the time when they are liberated must depend upon the state of the weather ; but, provided it is fine and the rearing-field of suitable pasture, the sooner they are out and about the better. Naturally, for

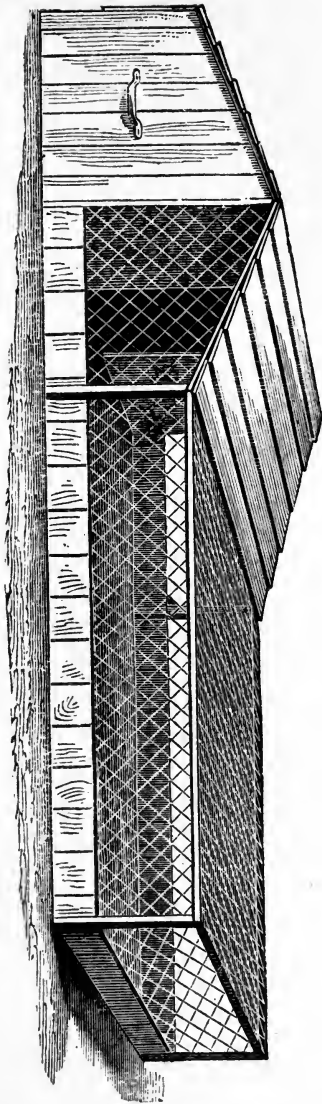


Fig. 29.—Rearing-Coop and Run for Wild Ducks.

the first week the limit to their movements must be made by the covered run; but after this period they may have free run of the field. It is, however, necessary to exercise some judgment in reference to wet or very cold weather. The young ducklings will very soon show their ability to seek and find such natural food as the rearing-field provides, and by degrees the number of feeds per day, and the quantity of custard, may be gradually reduced. At from three to four weeks some of the foster-hens—those in alternate coops to start with—may be removed, and by the time the ducklings are six weeks old the feeding-times may be reduced to twice a day, morning and evening.

There should be no stint in the amount of food given; but the ducklings should eat it up cleanly, and any really left over should be removed. It will probably be observed that at the first meal the youngsters will apparently be satisfied when about half the food is consumed; but, if not hurried, they will break off and then soon return to finish. It is therefore necessary to devote a little longer time to seeing them complete the first meal than to the others before removing any surplus food. As soon as the ducklings are nine or ten weeks old they may be removed to the water-side, to what will be their permanent quarters.

During all this time more or less constant observation of the young stock must be maintained. Any showing signs of weakness should be picked up and placed in a basket provided with warm material, which should be placed near a fire, but not too close to it. They will quickly recover, and may be returned to the others as soon as they show themselves well and strong again. If the weaklings prove numerous, however, they are best kept and treated separately from the other broods, as they then progress better. Obviously, however, special arrangements cannot be made

in the case of only two or three such weak ones, which must be left to take their chance.

Wild ducklings must not be allowed access to water into which they can get bodily ; but they require fresh spring water for drinking purposes, and this must be provided after every meal, in suitable vessels. These must be so arranged as to prevent the ducklings from getting into the water. Drinking-pans of the necessary type can be purchased or made.

If the directions given be carefully followed, and proper and intelligent care be given to the young wild ducks, they should progress very rapidly in every respect. For the most part they require little protection against themselves ; but in certain conditions of weather—when it is wet and cold, and when hot sunshine alternates with sharp cold showers—it is sometimes necessary to exercise some discrimination in allowing them out for the whole day at a stretch. They should be treated in every way as being wild ; but the lack of the maternal protection must always be borne in mind and provided for as far as possible in the earlier stages of their existence.

The removal of the youngsters from the rearing-field to the permanent quarters beside the water will at the same time entail a change of feeding and treatment. Once out of the rearing-field, where the young wild ducklings will have had everything to assist and protect them, they will enter upon what is the most precarious period of their existence ; but once fairly and firmly established, there is very little to fear upon their behalf. Properly tended and properly fed, they are almost sure to do well ; but there always arises the question of outside enemies when they are first turned away—so to speak—and it will be necessary to provide against this contingency also. Before proceeding further with the matter of the feeding of the

young stock, it will be advisable to devote some attention to these matters, and the nature and position of the water to which their removal has to be made.

Before the removal of the ducklings to water is effected, it is necessary that, where a choice of water exists, the most suitable for the purpose should be chosen. Speaking generally, almost any sufficiently extensive piece of water is suitable where the ducks will make themselves at home; but, in view of the semi-artificial conditions under which they are being reared, it is necessary to avoid certain disabilities which may occur, and provide for certain necessary conditions.

Stagnant pools are quite unsuitable. The water need not be very clear and clean, nor need it possess a decided flow. It may be a large pond, small lake, or a stretch of a slowly-running stream. A brook, if large enough, will suffice, or any small stream of water may be dammed back so as to form a pond or a small lake. It is necessary, however, that the banks upon which the coops with the young ducks are to be placed should be shelving and dry; that is, not spongy, soaking up the water and holding it. Nor is it advisable that the water should possess a heavy muddy bottom. To a reasonable extent the bottom should be somewhat muddy; but this should rest upon a solid foundation, and the water be of varying depths, from a few inches to a foot or so over a material portion of its extent. If the bottom be gravelly at places such as the intake and outflow, or at the sides, so much the better. A border of rushes, flags, and reeds of healthy growth is a great desideratum; whilst a fringe of willows, or other healthy waterside-growing trees, is also of the most material benefit.

It will be observed that in the selection or arrangement of the expanse of water, cover for the ducklings, freedom

from disturbance, and a good supply of natural food, together with convenience for working the coops and for feeding, all have to be taken into consideration, and, if possible, provided for. There is one other matter to be referred to, and that is the presence of predatory fish, which, if of any size, must be cleared out beforehand, otherwise many of the young ducklings will fall victims to their voracity. The question of vermin, notably rats, is also a serious one; but it will be dealt with separately.

The general idea which should govern the choice of a water for the ducklings is that they shall remain at the one to which they are first taken, and make that their permanent home. When several large batches are reared, it may be necessary to spread them over two or three expanses of water, in which case each batch should be allocated to its particular water in the first instance. But, as sometimes happens, it may be necessary to use one particular water for partly completing the rearing of the ducklings, and then transfer them to their permanent quarters. It must be remembered that the young wild duck require a very great deal of looking after for some little time after being put to the water; consequently, where the distances are greater, the nearer stretch of water should, if possible, be chosen for them in the first instance.

As mentioned previously, it is at about nine or ten weeks of age that the ducklings are removed to water. By this time the coops should be practically cleared of the foster-hens; but if any still remain they must be discarded when the removal takes place. When the broods are taken to the water, each coop should contain from twelve to fifteen ducklings, and not more, because they grow very rapidly, and require plenty of room. It is best to remove them after they are shut up for the night, and give them their liberty not too early in the

following morning. The range of coops should be placed at favourable spots not too close to the margin of the water. No hard-and-fast rule may be laid down as to this detail; but endeavour should be made so to situate the coops that there may be some small individual feature which will mark out each coop's position to its denizens.

For the first two or three weeks the feeding should take place three times a day, additions, however, being made to the food hitherto given in the form of barley-meal and oatmeal, which must gradually replace the duck-meal formerly supplied. They should be scalded with the latter at first; but as this is replaced, so the scalding may become less, until, when the wild-duck meal is finally dispensed with, the other meal may be merely moistened. Clean, sweet house-scrap of meat, vegetable, potato, and the like may in due course be added to the other food, and if nothing of the kind be available, boiled rabbit meat, chopped up, proves a desirable substitute and addition.

After two or three weeks' feeding as above described, the ducklings will soon come to whole grain as their food. In this connection the over-abundant use of maize cannot be too carefully avoided. That cereal has been freely recommended by some writers for the purpose of wild-duck feeding, and to this fact much of the failure to rear *good* and *wild* wild duck is to be traced. It makes them fat, bad fliers, and bad stay-at-home birds, impairs their egg-producing powers, and is, unless as an exceptional food, rather deleterious than beneficial in its effects. Some of the firms who supply wild-duck grain incorporate it in their mixtures; but some do not, and where such is purchased the presence of maize must be looked for and provided against. The basis of all wild-duck food from the time the young ducks are able to take whole grain should be home-grown and thoroughly sound wheat,

barley, and oats, with a little sound maize given occasionally in wet and cold weather. When the ducks are mature, home-grown wheat is the best possible food, and should be the basis of the whole of the feeding.

As soon as the feeds are reduced to two, then at first the grain given in the morning may be slightly soaked, and that provided for the evening be given dry. Later on, as the birds mature, hard food at both meals will suffice.

We have now reached the stage when the wild ducks which have been reared may be regarded as mature birds. By this time they will have abandoned the coops and taken to such places adjacent to the water as may have seemed fit for resting purposes. As soon as the ducks give up using the coops these should be removed, as they will require no further shelter beyond that which they provide for themselves.

As will have been seen, there is no great difficulty attaching to the rearing of wild duck, provided suitable accommodation is at hand. The difficulty is to retain them upon your own waters when they have become mature, or nearly mature, birds. It is in this respect that most of the failures occur, and it must be admitted that there is no great satisfaction gained by rearing wild duck to stock other people's water. As a rule, the only causes contributing to the loss of ducks are those of incorrect management and improper feeding.

Two objects must be held in view by those rearing these fowl. In the first instance, the birds must be really wild, and good flyers; and in the second place they must have their proper home, to which they unfailingly return. Compared with pheasants, for instance, wild duck are naturally far less disposed to leave their home; and in order that those who may be trying their hands at wild-duck rearing may properly appreciate the way they should

be handled, it is advisable to make clear one or two points in the birds' natural habits. Wild duck proper only fly from one water to another, and during the daytime they prefer to assemble with numbers of others of their kind, and resort to out-of-the-way and secluded ponds, or to extensive open sheets of water, where they will pass the time dozing and sleeping or swimming about, contenting themselves until the day begins to wane, when they wake up to increased activity and fly to their feeding-grounds. The real wild duck feed almost solely at night-time, and any attempt on the part of the rearer of these fowl to induce them to do otherwise is sure to result in the loss of his birds. It must be borne in mind, too, that as a rule wild duck are reared for other than ornamental purposes—for shooting, in fact—and unless they fly well, get up speedily, and are away quickly, they possess little or no merit from the sportsman's point of view. No one rearing wild duck then need fear their flying away to other waters, and resorting with other ducks, provided it is known that they will return to their own haunts, and be found there when required. To ensure this being the case, and that the ducks shall fly well, a proper system of feeding is required.

As soon, then, as the ducks come to their one feeding-time per day, which will be as soon as they exhibit a disposition for flight, the feeding-time must be fixed for the evening, just before or as darkness is setting in. The ducks will then be lively and fresh, ready for their meal, and content to remain where they are after they have had it. It must not be supposed that in a state of nature wild ducks obtain all their food within a short space of time; on the contrary, they are feeding or searching for food off and on during nearly all the night-time. The same programme is necessary for those reared by hand, and it is

only by carrying it out that you can make sure of retaining your ducks.

The mode of feeding to be adopted is at first to scatter the bulk of the food on the margin of the water. Then, by degrees, gradually come to throwing the whole of it into the water in places where it is from 1ft. to 18in. deep. In this way the birds will consume less and benefit more by it. They will busy themselves feeding more or less during the whole of the night, and if they require anything more they will occupy themselves searching for such natural food as their haunts supply in the times between dozing and fighting during the day.

Now as to the best food for wild duck, a matter of great consideration, and one which proves a stumbling-block to most of those who experiment in wild-duck rearing. To begin with, it is necessary to repeat that maize is not a suitable food. Given occasionally, and in small quantities, it serves a purpose; but as a staple food its use must be avoided. There is nothing better than wheat and barley, and it is not necessary to be too particular about the quality, provided it is reasonably sound. The grain should always be soaked some hours before being given to the ducks, and if you have cause to vary the food, it is inadvisable to mix two or more sorts of grain. It must also be remembered that a very useful manner of feeding wild duck is to make a small stack or cock of corn in the straw near the water. The rakings from any cornfields are best for the purpose, and the ducks will work out the stack by themselves, just as game-birds, such as pheasants or partridges, will. A reserve of food put up in this manner proves of great assistance, particularly where ducks on distant waters are concerned, and generally in hard weather with severe frost. It is also not a bad plan occasionally to throw grain in the straw upon the

surface of the water. It will occupy the ducks a considerable time when feeding at it, and is an economical mode of giving them their food.

There are, furthermore, several cheap forms of natural food which may be provided for wild duck in such seasons when they are plentiful. Acorns are much appreciated, so are haws from the whitethorn bushes. These can often be obtained in considerable quantities, and are easily stored. Wherever, too, the paunchings from rabbits can be obtained, they should be utilised by being chopped up small and thrown into the water. Not only do they serve for your own ducks, but they are very attractive to others.

If wild duck be fed upon the lines that have been laid down in this chapter, they will neither desert their proper homes nor deteriorate in quality. On the contrary, by always returning at night-time to their regular haunts to feed, they will bring other ducks with them, so that the stock is more likely to increase than to decline in numbers. Not only will they attract other wild duck, but in districts where it is possible other species will occasionally be attracted and remain. The fact that other duck are brought to the feeding-grounds is one for satisfaction, especially if the strangers remain until the breeding-season, because you then obtain a valuable infusion of fresh blood amongst the stock. Obtained in this way, the new blood from really wild birds is of much more value than when only secured by turning down two or three mallards from other sources, or by importing a fresh lot of eggs.

It is not a bad plan, especially during the winter months, to keep a few pinioned ducks upon the waters, both as an attraction for any passing ducks, and as influencing also those belonging to the place. Sometimes

these birds may find counter-attractions at neighbouring waters, and may occasionally develop a tendency to leave their own. In time some of the ducks may do so permanently, and thus gradually draw off others. It is but rarely, however, that this occurs, but when the tendency to do so exists, the retaining presence of the pinioned birds will invariably prevent anything of the kind.

During the winter months care must be taken to keep the water open for the ducks should anything in the form of severe frost occur. It is not only necessary that the ice should be broken, but that it should also be removed from the expanse of water which it is desired to keep open, as with ice floating upon it, not only does it freeze more quickly, but at times ducks will get frozen in between it. As a rule, they know enough to leave the water when ice is forming quickly, but it is not unusual for some of the hand-reared ones to become caught. Free water is, moreover, most essential for them, and if it be not kept open the duck will go to water which is so maintained. For the purposes of clearing out the ice, a suitable ice-rake is necessary, and should be provided beforehand. The space of water to be kept open must be cleared of ice when the birds are fed at night, and again in the morning if any should have formed. The presence of a number of pinioned birds by daytime is also serviceable at times, as by swimming about and entering and leaving the water they prevent ice from forming.

Except in the case of wild duck which are kept for a special purpose on ornamental waters, it is not advisable to erect anything in the way of shelters for them. Where wild duck are retained permanently, the shelter may take the form of a semi-open shed, erected partially over the water and partially upon the bank. The sides should not

reach down to the water level, but to within about gin. of it, and there should be a duck-ladder for the birds to leave the water (Fig. 30). The best plan to shelter wild duck in hard weather is to put up a small stack of loose grain in the straw. It should be set up loosely, so that the fowl can work it, but it must be so set up that it does not topple over. If the weather sets in very hard, and it is almost impossible to keep the water open, as is some-

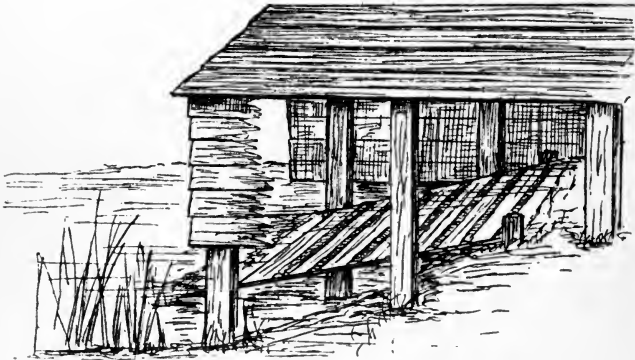


Fig. 30.—Waterside Shelter for Wild Duck.

times the case, the ducks will feed all around the stack of grain, and pass a good deal of their time about it.

Before passing to the subject of the protection of the ducks from vermin, a word or two may be said on the subject of killing what may be wanted for eating purposes, and also for sport. In the first place, flapper-shooting, except in the case of very extensive duck preserves, should never be practised, as it is sure to entail the loss of far more ducks by desertion than by the actual shooting. Of course, more birds can be actually and

easily shot at one time ; but, as said before, the number of ducks lost through the practice renders it wholly wasteful. When seeking birds for the table the wildest should be shot first—those, that is, which being most timid first rise from the water. As a rule, they are outside birds, but in any case afterwards it is necessary to pick off single outside birds, and never to fire into the thick of them.

As regards the shooting of wild duck for sport, it is only necessary to observe that this part of the subject lies outside the scope of this work.

From almost the moment when they are hatched wild ducklings are exposed to the attacks of their natural enemies, and even when mature they require protection from certain kinds of vermin. Unless means are taken to prevent the ravages of both furred and feathered vermin, continued losses are sure to result ; whilst unless the culprits are caught and killed, they are sure to return again and again until very serious damage is caused.

The worst enemies of wild ducklings are rats, and it is necessary to protect the foster-hens whilst sitting, otherwise these vermin are quite likely to make their way to the eggs, and maybe kill the hens and carry off more or less of the clutch. When the youngsters are born, the closed runs, with which the coops should be provided, serve as protection ; but even then rats may burrow under them to obtain the ducklings. It will be necessary to watch carefully for evidence of their presence, and steel traps should be put down for them wherever they may leave signs of having tried to enter the coops or make their way into the runs.

The fact that the rearing-field must be enclosed with very small-mesh wire-netting will to a certain extent keep off rats and other small furred vermin, such as stoats and weasels ; but the former soon learn to climb over. If,

however, a few small traps be set round the outside, they are almost sure to stop any vermin, as these animals always seek an entry for some time, and will pass persistently up and down or round the wire-netting before making any attempt to scale it. The traps need not be baited, but must be carefully covered up, and be staked down or attached to the wire. As a guide to the uninitiated, it may be mentioned that when stoats or weasels kill the ducklings they invariably bite into the heads of them, and seek to draw them away. Rats do not do this, but usually partially or wholly devour their victims.

Amongst winged vermin, crows and occasionally rooks are very destructive to wild ducklings, once they find them out. Crows always carry away any victims they seize, and devour them at their leisure, so that when the ducklings disappear without apparent cause the blame must be laid on these feathered thieves. Once they start taking ducklings, practically nothing will stop them, unless you catch or kill them. They are remarkably cunning and wary, and it behoves the owner of the young fowl to be extremely alert, or the vermin will come again and again without being noticed. Almost the best way is to conceal yourself in a favourable position, provided with a gun, and allow somebody else to let out and feed the ducklings. The marauding crow or crows will then very soon make their appearance, and can be shot. They can also be taken in traps; but, being so quick and wary, they are very likely to elude your wiles. Probably the best way of getting crows when they are taking or attempting to take the ducklings is to confine most of the latter to the coops or runs for two or three mornings. Then provide yourself with a small wire-covered run, closed all round, and beneath this place half-a-dozen of the youngsters.

Round about the run, 6in. to 9in. from its sides, several steel traps should be set, and carefully covered. If left undisturbed, the marauding vermin are sure to seek to get at the protected ducklings, and become caught in one or other of the traps.

Magpies, jays, and hawks will carry off the ducklings from time to time. You can always make sure of these gentry, however, by using a pole-trap, which should be worked in the following manner. Set up a pole about 9ft. high and 6in. diameter at the top, which should be hollowed out about 1in. deep so as to contain a 4in. round hawk-trap. To the trap a chain with a ring should be attached, and this ring should be fixed round a length of stiff wire, let into and running down the side of the post, so that when the vermin is caught and flutters it pulls the trap off the post and slides down the wire to the ground. The trap requires no bait. Wherever the rearing-fields for wild ducklings are any distance from the dwelling-place, so that constant observation cannot be maintained over them, one or two pole-traps set up in this manner should always be provided as a safeguard against winged vermin. The traps should not be set to go off too lightly, otherwise small and in-offensive birds will be caught.

I have also known cats with poaching proclivities to prove responsible for many lost ducklings; but they are easily taken in a box-trap baited with the head of a freshly-killed rabbit.

As soon as the ducklings are removed to the water-side, they are naturally more exposed to the attacks of vermin, and once they are free of the coops, foxes, if they are plentiful in the neighbourhood, prove a constant source of danger. To ensure freedom from molestation from the furred and feathered vermin which have

been named, more or less constant watching of the ducklings by the waterside will be necessary; but in a very little time they will learn to hide themselves from probable danger, and in this way protect themselves to considerable extent. If, however, losses amongst the ducklings occur, such steps as have been recommended above and may suggest themselves as suitable should be employed against the vermin; and beyond this, constant watching, with the assistance of a shot-gun, is the most effective means of protection. It is not necessary, as it is not expedient, to disturb the ducks, and by working round some little distance from where they are located adequate protection can be afforded them until such time as they are free of the coops, when their natural instinct prompts them to self-preservative habits.

When foxes get amongst the nearly mature ducks, as they sometimes do, their depredations are liable to reach excessive limits, and it is at the same time very difficult to deal with them, especially in hunting countries, where the destruction of foxes is looked upon almost as a crime. I have, however, found that a number of traps set about in directions whence the foxes may approach will tend to scare them. Another plan is to cut some strips of bright tin-plate about 2ft. long by 4in. wide, which, having had one edge cut out in zigzag fashion, should be set up in cleft stakes so as to stand about level with the top of any growth there may be. The tin should be partially striped with tar. Another good plan is to hang up two or three old roasting-jacks round the outskirts of where the ducks congregate. Particulars of how to furnish them will be found in the chapter on "Foxes and Game."

As will have been seen, there is really no great difficulty in the successful rearing of wild ducks, provided the simple rules as to their feeding and management are

carried out. They are remarkably free from the little ailments which prove so fatal to game-birds, and even poultry.

I have made no mention of diseases of wild duck. The reason is simple. If the instructions and advice given be followed they will not suffer from any. Sometimes the weather may cause a little simple cramp and diarrhœa ; but removal to warm quarters soon puts the one right and proper feeding will soon cure the other.



CHAPTER XXIX.

THE HARE: Its Natural History.

ONLY two distinct species of the hare exist in the British Isles, for what is called the Irish Hare, and dignified with the name of *Lepus hibernicus*, is really the Blue or Mountain Hare (*L. variabilis*), whose habitat extends into the Northern portion of the sister isle. The common hare (*L. timidus*) is found throughout our islands, from the North of Scotland, where it is comparatively rare, to the Isle of Wight and Cornwall; but beyond its extension to Ireland the Mountain Hare is confined to Scotland. These two hares are as distinct in habit as they differ in regard to the class of land they frequent. The Common Hare frequents the lowlands, plains, and downs and commons, where what are termed the stiff soils predominate; whilst the Blue or Mountain Hare affects the uplands, and, as its name implies, the more hilly and mountainous portions of the country where it occurs.

The Common Hare extends all over Europe, and according to irregular lines of latitude exhibits three different types, which, however, run into one another. These types do not show themselves distinctly in our common British hares; but the separate types exhibit themselves in two different forms of it, which are common to the Northern and Southern portions of our islands. Thus in England, for the most part, the hares possess a medium coat, with

scantly-haired ears, and a brighter, redder colouring; whilst in Scotland the Common Hares possess a heavier and show a more greyish coat, especially in winter. In addition to these main variations of type, the Common Hare is subject to others of considerable extent, but locally influenced, as it is also, but in a lesser degree, to variations of size and shape. Thus what are called yellow hares occur not infrequently all over the country; whilst there is a peculiar strain of grey hares which prevails in Norfolk, and is of occasional occurrence elsewhere. Black hares are occasionally recorded throughout Great Britain. Albinos are also of not uncommon happening, and pied specimens are not unknown, the latter colouring being due to individual disease. The "yellow" hares invariably more closely resemble the rabbit in form and size than the typical hare.

The Mountain Hare is "bluer" in colour than the common species, the ears are shorter and tipped with black. It is actually the true Arctic hare, and goes through the process of changing its coat to white during the winter months, which renders it most noteworthy. The change is gradual, commencing from the middle to the end of September. The feet change first, the white passing upwards over the legs, and gradually extending until all but the back is white, this portion of the body maintaining its summer colouring longest, until somewhat suddenly the process is completed, and the whole animal becomes of a beautiful glossy white, the tips of the ears alone remaining black. The process is not in this case a shedding of the coat, but is an actual change of colour in the fur. But the return to the Mountain Hare's natural hue is really a shedding of the fur, commencing generally in March, and being completed about the second week in May. The hare is almost as deserving of the epithet

ubiquitous as is the rabbit, for although the latter may be more numerous throughout the country, it is not more general than the hare, which will thrive and multiply anywhere, so that it be afforded a due measure of protection from man, beast, or bird of predaceous habit. True it is that in some districts hares are apt to become extremely scarce for spaces of time more or less prolonged, but this is oftener the fault of the owners and tenants of the land than due to mere unsuitability of soil and locality. In its choice of habitat *L. timidus* is very curious, evincing as much fancy for some particular spot as aversion to others, and this, with its peculiar habits in regard to leaving and returning to its form, renders it very easily poached and very exposed to vermin attacks, although its inherent timidity and powers of scent, sight, and hearing somewhat counterbalance this defect.

The hare is a far more prolific animal than is generally supposed, but as its productiveness is generally compared with the superabundant fecundity of the rabbit, this trait is often overlooked; but a consideration of the time occupied in producing successive litters soon shows that it is an error to suppose it wanting in prolificacy. Breeding is carried on more or less during the whole year, according to the nature of the locality and the season. Thus moorland hares are less prolific than those inhabiting richly-cultivated districts, and from two to three months during the winter season breeding entirely ceases. Common Hares, on the other hand, only cease breeding if the weather prove severe for the few weeks before and after Christmas, and this fact has, I believe, more to do with scarcity of food than the coldness of the weather.

Hares do not pair in the full sense of the word. The does submit themselves to the rivalry of the bucks, but one buck soon establishes himself as the master for one

doe, and they pair for the time being. The buck then seeks another mate under similar conditions, leaving the doe to breed and to rear her litter alone. In this manner breeding proceeds all the year round, except under the circumstances just noted, and three or even four litters may result within the twelve months. The period of gestation is usually defined as being thirty days, but I very much doubt if this be correct, and I should be inclined to maintain that the period varies, is never less than thirty days, and not infrequently reaches thirty-eight or forty. I am quite convinced they "go" invariably more than the calendar month. Hares breed from as early as eight or nine months, according to whether early born in the year or otherwise.

Contrary to the almost universal opinion that hares produce but one or two at a litter, the usual number is five, frequently only four, and occasionally six or seven. The form where the young are brought forth is, as a rule, of the rudest description, the doe making no provision in the shape of a nest or the like, as does the rabbit, although sometimes roughly-scraped holes are found where hares have kindled. As a rule, however, the merest shelter to the doe's hindquarters is deemed sufficient, and the young are dropped on the bare ground. For from five to ten days the young remain at the kindling-form; they are then removed at night-time to individual suckling-forms, probably prepared beforehand by the doe, in which they remain, if undisturbed, each in solitary state until they reach the age of a month or five weeks. These suckling-forms are spread around at a more or less considerable distance from the mother-hare's form, and at a corresponding one from each other. To each of these in turn the doe resorts at intervals to suckle her young, which remain placidly in their respective forms until they begin

to feed; but they continue to return to them until lactation ceases, when they are cast out upon their own responsibility, and pursue an individual existence.

In the case of disturbance by some cause or another, the doe will remove one, more, or all of a litter from the suckling-forms to others. It is at such times when the removal is incomplete that two or three leverets are found together, a fact which has sufficed seemingly to confirm the false notion that hares only throw that number of young at a birth. The discovery of individual leverets at their suckling-form has also contributed to this notion, but if a thorough search be made, the others will be found at no great distance. Continued disturbance will cause the doe to gather all her litter together and remove them to considerable distances at times, when she also will seek a fresh form in their neighbourhood. Taking into consideration how easy victims the hare's young prove to small vermin, it is obvious that this habit of separating the young is a protective one, without which hares in unreserved districts must cease to exist. For all, however, that it is so timid an animal in face of man, dogs, or vermin, it is equally courageous at times in warding off unintentional danger from farm stock and the like, the doe hare frequently fighting off in the peculiar boxing manner it adopts sheep or cattle which are likely to injure its young, over which it continually maintains a protective watch. Even the leverets will sometimes show fight in this manner when disturbed.

The form of the hare is not always placed or chosen under the same circumstances. The choice of form depends upon the season of the year, and the description of weather actually prevailing at a particular period of the season. Thus, in hot, bright summer weather, or during periods of heavy or continuous rain, open coverts

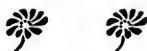
are usually chosen for the increased shade or shelter they afford, otherwise the bare fallows, growing corn, or the pastures suit it best during the warm, fine days of spring and summer. Strong winds will find the hares formed in the long tufts of old grass lands, and in the very cold but fine weather of the winter months the hares prefer the short, thick pastures of any lands of southerly aspect. It is not often that hares are found in the hedges or small spinneys; in fact, where ground vermin are likely to frequent, hares do not form.

For the most part, the hare lies couched by day, and feeds towards evening and at night, when it wanders, under ordinary circumstances, very far afield in search of the varied and carefully-chosen diet it affects, returning at dawn to the form best suited to the prevailing or anticipated weather.

It is an entirely mistaken but very general idea that rabbits and hares take similar food. No two animals are so much alike and so little alike. In the first place, the hare can scarcely be termed a grass-feeding animal, and there are only one or two real grasses and clovers which it eats. As it is important that preservers should know them, I mention the names of the three most prominent, if even there be others to warrant the distinction. They are the so-called common meadow-grass and the hard fescue grass. Of the former there are one or two varieties, especially the heath or moorland variety, greatly favoured by upland hares. Amongst clovers the marl clover or cow-grass is chiefly patronised, and hares will eat this trifolium bare to the soil. In addition, the sow-thistle and dandelion are much liked. Coming to the vegetable garden, endive, lettuce, thyme, chicory, and, in a lesser degree, parsley, are mainly favoured. The flower-garden will provide them with carnations, pinks, stocks, and nastur-

tiums as a *bonne bouche* if they can command entrance. In winter-time, when deep-frozen snow renders other food unobtainable, the hares will nibble the bark of many trees, and, failing woods or plantations, they will bark the thorn-bushes of the hedges, feed off the tender shoots of the whitethorn and wild rose, and eat the haws shaken from the bushes.

Other points in connection with the natural history of the hare will be referred to where they become important in connection with their preservation.



CHAPTER XXX.

THE HARE; Introduction and Maintenance of a Stock.— Hare-Warrens.—Preservation and Protection.—Diseases.

ANY manor where hares are regularly met with, in either small or large numbers, may be considered suitable for their preservation. It is mainly a matter of soil and food-supply, because, as pointed out in the previous chapter, they are quite unlike rabbits in their manner of living, and unless the main supplies of their favourite food are ample and permanent, they will linger along, decline, and die. The nature of the soil has also much to do with it, and to attempt to preserve hares to any extent in a country where they are not naturally plentiful, is to court disaster. A very few hares spread over a large area does not necessarily indicate that the land is unfavourable as a whole, because, if not overdone by rabbits, any stiff or loamy soils, as well as sandy ones, will support them. The fact of there only being a few in evidence usually means that those few are frequenting their *favourite* ground, and that an increase of more or less extent would be perfectly feasible. It is when an expanse of land is wholly destitute of hares that doubt may exist, and very reasonable doubt, that the district, manor, or farm in question will not support them. It is mainly a matter of the soil, and neither trouble nor expense will put a head of hares upon land which is by its nature unsuitable. Roughly speaking, the

plant-growth which I have mentioned as being the main food of the hare is sufficient indication of the adaptability of ground to carry them. Health and heart in the soil, coupled with proper drainage, natural or artificial, are main factors to be reckoned with.

Wherever it is desired to work up a stock of hares or substantially to increase one, two courses are open to the preserver. Either he can turn away a number sufficient to provide the necessary breeding-stock to bring the quantity up to what is required, or he can set up one or more hare-warrens wherein to breed them, and turn the hares adrift as they come to maturity. In view of the fact that the largest number of young which may be expected to be produced by a couple of hares turned away during twelve months is only from twelve to fifteen if all survive, and that, as a rule, not more than half this number are finally reared, it is evident that turning hares down is neither a very speedy nor a very certain way of getting a stock together. Then, again, to be sure of the does breeding, it is necessary to turn them away in equal numbers as far as the sexes are concerned, which adds to the expense when any considerable quantity is handled. It works out in practice that it requires about twenty-eight months for each pair of hares to realise a stock of fifty from the original couple, and including the progeny of their first year's offspring. This means, however, that from the time the hares are first turned out, two shooting seasons must be allowed to elapse before sport of any kind would be advisable. It is, therefore, evident that in endeavouring to work up a stock of hares upon these lines, considerable time, trouble, and expense must be devoted. Beyond looking sharply after the vermin, and keeping it well killed down, there is nothing very particular required to be provided for the hares except to see that the

natural food they require is obtainable upon the land over which they are to be preserved. If not already there in sufficient quantities, it must be grown to meet the requirements. Given generally favourable conditions, as prevailing upon a preserve, one hare to every ten acres may be set down as a light but sufficient stock. Any material increase upon this proportion of hares to acreage commences to constitute a heavy stock. Upon the bases of production and stock which I have named it will be seen how quickly a manor may be brought up to the description of "fairly stocked with hares."

Although it is quite impossible to maintain a very heavy stock of hares by enclosing and feeding them artificially, it is perfectly feasible to maintain a hare-warren for a season or two with quite satisfactory, and sometimes noteworthy, results. But land will very soon become soured by hares, and incapable of sustaining them: to ensure anything like success in this direction adequate space and annual or biennial moving of the enclosure to fresh ground are absolutely necessary.

A warren or a breeding-meuse for hares should consist of several acres of enclosed ground, which should comprise partly pasture of the necessary nature, together with an extent of not too closely set coppice or plantation of resinous and deciduous saplings. The fencing should consist of half small mesh and half large mesh wire netting, 6ft. out of the ground, the former 1in. mesh, reaching to at least 2ft. in height, and the latter 2½in. mesh. The enclosure should then be divided into sections of about half an acre by 2in. mesh netting, 4ft. out of the ground. Each section should be provided with a small meuse, not less than one-fourth to one-eighth of its own area.

Into each small meuse turn a buck and three doe hares as soon as mild weather supervenes upon Jan. 15, and

as soon as it is evident that pairing has occurred with one or more does in each meuse, change the bucks for a week, then catch them up, and give the does the run of the large enclosures in the warren. Should any does prove barren, transfer them to one of the enclosures, and place a buck amongst them, leaving them together until the

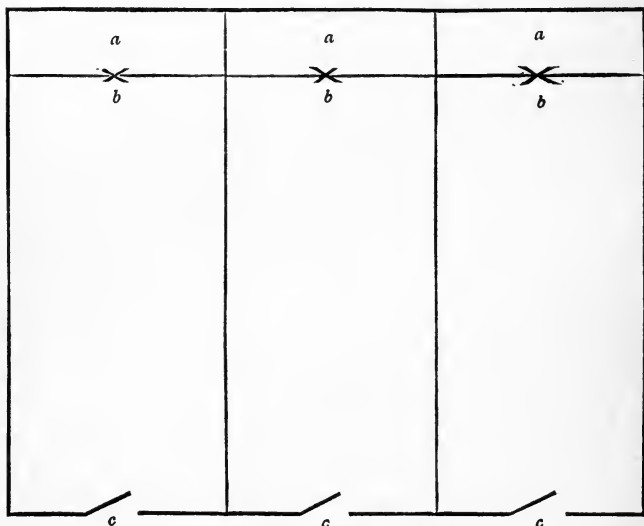


Fig. 31.—Plan of Hare Meuse.

a a a, Mating Enclosures. *b b b*, Small Entrances. *c c c*, Gates.

desired end is obtained. The hares are easily caught up, when required, by using a long-net, and working it slowly up the enclosures to either end.

The great point is to ensure absolute freedom from disturbance by dogs and vermin and other persons than the keeper in charge of the warren. If the ground be fairly productive of the hares' natural food, they will soon settle

down, and become reasonably tame, or rather accustomed to their restricted area. Such food as hay, made from fields freely proportioned with fescue and meadow-grass, freshly-cut clover (cow-grass), and other food items, such as were mentioned, together with white turnips, mangolds, carrots, and swedes, should be provided for them, not actually as their main provender, but auxiliary to what they can obtain in the enclosures.

As the litters of young hares come along, and the period of their being suckled ends (the leverets learn to feed much earlier in a warren), the does are removed to the small meuses, and the services of the bucks again brought into requisition. As soon as the leverets show themselves ready for it, they are turned away under such conditions as will ensure their reasonable safety and prosperous growth to maturity. As a rule, five litters in a year may be expected from hares thus confined; the produce of the first kindling should breed at eight or nine months, and each set of one buck and three does provide about a hundred hares ready for shooting in the October of the second year following the inauguration of the warren. I have given the maximum results reasonably to be expected from such concerns, and no attempt should be made to decrease the areas named, or to increase the number of hares put down.

The preservation of hares upon a shooting or individual beats of a sporting manor demands no very particular means being taken other than those necessary for the feathered game on the estate, beyond protection from vermin and poaching; but to both these classes of enemy of the game-preserved, hares are peculiarly exposed. As regards the former there is no necessity for special reference except as regards hares on open commons, downs, and lands of such like general character, which perhaps, beyond a few partridges, carry very little else but hares. Here,

however, special means of protection must be accorded from the attacks of vermin, which, if not relentlessly pursued, will play sad havoc with the leverets, if even the old ones escape.

The poaching of hares goes on, unless prevented, both by day and by night, by means of dogs—lurchers, greyhounds, and speedy mongrels—and the employment of nets, long and short, according to the scene of the operations. Snaring is also largely practised. The habits of the hare are such as to render it a particularly easy victim to the poacher, notably by night, and only incessant watching will prevent serious losses in one direction or another. The fields and pastures bordering on the high-roads, cross-roads, and lanes are usually more favoured by poachers than those lying away from them. Wherever there is any considerable stock of hares all gates along the roads and lanes should be properly fastened—padlocked if possible—and the hinges so furnished that the gates cannot be opened from that side. Gaps ought to be all well fitted with brushwood, strongly staked in, and all other gateways and openings be well looked after. It is in these quarters that most damage is likely to occur.

It is, however, during heavy snow that hares chiefly fall victims to such poachers as are acquainted with their peculiar ways during weather of this kind. The hares lie so closely in their forms that, except for a small breathing-place, they are quickly enveloped, and so “squat” until, at the end of about twenty-four hours, hunger drives them forth, when, with no other apparent thought than the satisfying of their craving, they throw caution to the winds, and seeking out the nearest available food-supply in the hedgerows, woods, or root-fields, are back again at the earliest moment in their forms, an easy prey to the poacher.

The peculiar attraction which green wheat-straw, and in a less manner green barley- or oat-straw, possesses for hares, provides the poacher with other opportunities, of which he is not slow to take advantage. They do not touch the ears, only the straw and blade, and nibble through the plant either above or below where the blades spring from the stem.

I do not think it would serve any good purpose to go too closely into the details of *how* hares are poached. I have specified the conditions *when* this may occur, and the keeper must ascertain from experience the means to be taken for preventing it in the varied and successful ways it is carried on. Let it only be remembered that hares travel about at night-times in a remarkable manner, and invariably cover the same paths when in search of food or when on courtship intent.

Hares suffer from but a comparatively small number of diseases, and only to severe extent when too closely preserved, or in times following continued bad weather. Against the latter little can be undertaken; but it is impossible to maintain hares in a healthy state and overcrowd them at the same time. What is possible in the case of rabbits is utterly out of the question with hares, and where the former remain healthy and free from epidemic disease, the latter go down before it in hundreds. One or two such diseases then attack them. They would appear to be forms of enteric and typhus fevers. The latter, which is the least common, is very rapid and highly infectious. The intestines become greatly inflamed and frequently pitted, the visceral cavity in pronounced cases being full of a blood-coloured liquid, which in earlier stages is only present as a slight discharge on the surface of the intestines. The lungs at the same time become quite putrid, and exude a disgusting odour, the breath from such victims being infectious in the highest degree.

The ordinary enteritis from which hares suffer is much commoner. The lungs are not affected, though the other symptoms are similar, but much less marked. The disease is contagious, the water and certain kinds of soil becoming infected. It is less fatal to the individual, but being much more general and frequent, kills many more hares than the typhus. Of course, there is no remedy known applicable to these diseases in the hare, and whenever anything of the kind occurs, the only thing to be done to prevent further and future ravages is to kill off all the hares and restock on a small scale a clear twelve months afterwards.

Liver disease and tapeworm are occasional in hares, but cause but little mortality.



CHAPTER XXXI.

THE WILD RABBIT: Its Habits and Preservation.

No inconsiderable portion of the game-preserver's time, in nearly all parts of the country, will be taken up in his endeavours to keep down the number of rabbits within reasonable limits ; consequently, an intimate knowledge of their haunts and habits is indispensable.

Rabbits usually live in small colonies, each composed of one, two, or more families, all on good terms with one another. These colonies are formed in the latter part of spring, and continue up to the end of autumn or the commencement of winter. They are started by one or two does and a buck that may have wintered together in the same burrow. As soon as the season permits, this little community takes up its abode in a burrow suitable to its requirements, while the does construct their nests in small holes adjacent. Directly the first litter are sufficiently matured, the doe leads them to the burrow, and meanwhile prepares for a second, and so the colony is added to month by month until it becomes too populous, and subsidiary ones are formed by the young rabbits, until within a comparatively short time the original pair have multiplied a hundredfold.

We will now take a view of the haunts of rabbits during the several seasons of the year, commencing, as is most fitting, with spring. During the period from about

1st March to 1st May, they dwell almost entirely in burrows constructed in hedgerows or in banks or in the ground, and are careful to find their feeding-places as near their burrows as possible. In summer, provided they be unmolested, rabbits delight to pass their time in the open air, basking in the sun, or sheltered from the mid-day heat under some branch of bracken or bramble, perhaps, also, at the root of a tree, but in all cases within easy reach of the sheltering burrow, so that should danger or inclemency of weather threaten, they may at once retreat to it. They also affect the coverts during summer, one of open copse or brake being preferred. During autumn, the spring and summer haunts are in equal favour, according to the state of the weather. In winter small and warm burrows are sought, and one that leads under a large tree or a stone is preferred. In fact, the warmer the burrow, the less irksome do the rabbits find the winter, which, to them, is one of no small discontent. Spring is the season in which rabbits do most damage to corn crops, and spring and early summer are the times when the pasture-fields suffer most from a superabundance of them.

Of the wild rabbit it is often asserted that there are four varieties. In some localities they vary in size and colour, but by no means sufficiently so to warrant a distinction. The only true varieties existent are the result of crosses between the wild rabbit and some kind of tame ones turned down amongst the original conies. The similarity between the rabbit and hare begins and ends in a mere resemblance of form and habit; structurally, they are widely different and incapable of interbreeding, although persons have often claimed to be possessors of hybrids.

Rabbits are almost wholly indifferent as regards locality and surroundings, and seem to get on pretty well in even

the most unsuitable and inhospitable parts. Notwithstanding, they have their peculiarities like other animals, and particularly as regards sites for their burrows and the expanses they frequent. In some parts it is almost impossible to get together a dozen head per annum, while in others all efforts to exterminate them are futile.

Rabbits on the farm, it must be admitted, do considerable damage if allowed to become numerous; but on a well-conducted game-preserve this is unnecessary and undesirable. If one wants to make money or to pay some expenses by them, it is easy enough to form a small warren, or to fence in a few scores of acres of wood, copse, &c., without having them widely dispersed, inflicting damage in all directions, not only on the tenants' crops, but the owner's hedgerows, banks, and fields. But then they are useful to feed the foxes, and if foxes get rabbits they will not trouble the birds to half the extent they would if there were few or no rabbits. It must be borne in mind, too, that the rabbit does not live on young corn alone; that one cannot very well catch young rabbits, which do most mischief, in snares, nor yet old ones in traps not set in rabbit runs; nor would it pay the farmer to be continually on the watch, or to have some "duly authorised person" on the look-out for him, to kill his share of the rabbits, to which he has a concurrent right. The preserver, notwithstanding the Ground Game Act, has the ground game in his own hands, and if he is wise he will, in his own interest, keep the rabbits within proper and desirable limits. A farm without a few rabbits would be a melancholy sight indeed, and the farmer would be the first to protest.

The duties of the game-preserver, as far as regards rabbits, demand no specification. The same operations which are required to produce a head of winged game will

conduce to security and consequent increase of rabbits wherever they are in any way plentiful, and where they are not there is no great difficulty in making them so, provided the ground be suitable.

Opinions amongst preservers differ largely upon the subject of rabbits. Some will have none of them, others are always glad to see a good supply; whilst others, again, are prone to devote much attention to them and cannot have too many. I am of opinion that upon the average ordinary preserve a good quantity of rabbits, judiciously controlled, is very much to be desired. It is, however, practically impossible to run a big stock of hares and rabbits upon the same ground. If hares be required, the rabbits must go; that is certain, because they will either drive them away or may contaminate them with the contagion of epidemic disease. It is, however, quite possible to maintain a fair stock of rabbits and a modicum of hares, if proper regard be paid to their individual requirements. At the same time, everything depends upon the views or inclinations of the preserver himself. There is no doubt, however, that upon preserves situated in fox-hunting countries, rabbits are a valuable asset as a protection against foxes. They also possess the merit of attracting vermin from the birds, and they are useful in other ways to the preserver even if we leave entirely to one side the matter of the revenue—small or large—to be derived from the sale of them. Still, these are matters which do not weigh heavily with the owners of large preserves, although they bulk largely in the economy of rough and mixed shoots. There are even conditions of not infrequent occurrence when a sporting warren could very well form a feature of the preserve.

These, however, are after all matters of somewhat secondary importance. The control of the rabbits is,

moreover, so much an elementary knowledge of the gamekeeper that I do not feel justified in dealing further with the matter here. In many respects the whole subject of wild rabbits on the preserve or warrens, and other means of breeding them and improved varieties in large quantities, has been so freely worked and written up since I dealt with it in earlier days, that it would be superfluous again to thrash out a well-worn topic.



CHAPTER XXXII.

THE GAMEKEEPER: His Rights and Duties.

THE great diversity in the size and mode of management of game-preserves naturally means an equally large difference in the class of man called upon to take charge of them, from the head keeper who controls a great manor, involving several beats, to the one who has merely what is usually termed a one-man shoot under his care. It may very well happen that as far as the purely practical part of the work, the actual preserving, goes, the head keeper upon a big manor may know less than those under him. It should not be so, but frequently is so, when the former acts more as keeper-in-chief, planning the annual campaign in all its branches, whilst the under-keepers carry his ideas into effect. A head keeper in charge of a self-contained, moderate shoot, or an under-keeper in a similar position in regard to one or more beats of an extensive one, must know every detail of his work "from shell to shot," and besides exercising control over those under him must, or should, be able to instruct them practically in every detail of the business. He must further be as well able to bear himself properly in the rearing-field and upon the preserve during the off season as in field or covert or on the moors in the shooting-time.

Withal, he is bound to work in with the owner of the

preserve, and if I have divided the subject of game-preserving into two sections, it is because as far as we have gone the owner of the preserve can and should possess personal knowledge of that portion which has so far been dealt with, whereas in that which has now to be handled it is purely and essentially the keeper's duty to carry it out, and the preserver is bound to trust him solely to do so.

In many of the matters to be hereinafter dealt with, the position of the gamekeeper must be made quite clear, so that in the exercise of his duty he shall not exceed his powers. As a rule, gamekeepers believe they possess or arrogate to themselves exceptional powers; but, speaking generally, a gamekeeper, head or otherwise, ordinary or deputed, is not entitled to exercise any exceptional powers other than as the person in charge of his master's game, or as the holder of a licence to kill game.

A gamekeeper may be either deputed or ordinary. In the former case he may be deputed by the lord of a manor for a manor, and may also be deputed by his master to preserve or to kill the game, and to seize traps, snares, or nets, *but not guns*, if the same are being unauthorisedly used upon the manor or by a person who possesses no game licence. A deputation by the lord of the manor must be made in writing, bear a 10s. stamp, the name of the manor and of the keeper, and clearly set out the powers granted him. It must be registered with the Clerk of the Peace of the district, and expires with the termination of the service.

Ordinary gamekeepers are merely male servants, and the necessary duty must be paid for them. As such, and nothing stipulated to the contrary, they are subject to one month's notice on either side, or no notice at all in cases of misbehaviour. They possess no rights in regard to the tenancy of any domicile they may occupy beyond the limits

of their service, excepting always in the case of special agreement to the contrary.

A deputed gamekeeper possesses practically no advantage over an ordinary keeper ; but, on the other hand, the moral effect is frequently very considerable. It is necessary to point out that a gamekeeper of whichever class requires a £2 licence upon his master's land, and a £3 licence for any other if he would catch, kill, or assist in catching or killing wild game, unless he is merely assisting the holder of the necessary licence. In the latter case he must not employ his own gun, dog, or materials or tools. He is bound to produce his licence to a police constable or the holder of a game licence, and must give his full name and address to the former, or to any Excise officer, or the occupier, owner, or gamekeeper of any lands he may be sporting over, or to the holder of any other game licence. In other words, he is as equally subject to the same obligations to others as they are to him. He is equally liable as far as concerns dog licences, nor does his master's licence to keep a dog extend to him as regards a dog which is his own property.

Moreover, the law places many restrictions upon the gamekeeper, some of which, in relation to poaching and poachers, will be defined at a later stage ; but here it may be mentioned that a keeper must not shoot game at night, and if only acting as such to the tenant of lands or the shooting on them, he must not shoot even rabbits at night. A keeper may not employ poison to destroy game, and he must not lay down poisoned grain, seed, or meal, which will destroy furred or feathered life, nor use poisoned flesh except in a house or a garden, or in buildings, ricks, or drains protected from dogs. It is a misdemeanour if he uses man-traps or spring-guns calculated to destroy human life or to cause injury to human beings. He may

not buy or sell live or dead game, except for his master's account, and with the latter's consent in writing, and then only to a person licensed to deal in game, nor may he purchase game from an unlicensed person.

It will be observed from the foregoing how very restricted, even in these small matters, are the powers of the gamekeeper, and it would be well if the facts were more widely known and the regulations observed. The position of the gamekeeper must, of its very nature, bring him into contact or dispute with others, and he should be careful always to act entirely within his rights, endeavouring to do so without causing needless friction, and without overstepping the mark. Further, he ought always to be well backed up by his master, and the authority extended to him be as ample and far-reaching as is possible within reason. A keeper should never have to refer to his master, the preserver, for authority, and unless he greatly err, the latter should endeavour always to stand by his actions, and back him up. It renders the keeper's duty far easier, pleasanter, and distinctly more effective.

The gamekeeper's year may be said to end with the legitimate shooting season, but engagements are usually made from Lady Day. This is hardly fair upon a man taking up the charge of a shoot, and a new man ought to be already taking stock of his ground in January, because upon the fulness and exactitude of the information he gains during the earlier part of the year depends the success of his operations during the coming season.

It is also at this time that all dilapidations which may have accrued during the shooting-season must be made good again. There will be gaps to be put up, gates, hedges, and hedgerows to be dealt with, work perhaps not wholly performed by the keeper, but anyhow under order and supervision from him, so that all the odd corners,

broken-down hedgerows, and the many other spots and places which afford harbour for vermin may be cleared up and set in order. It is also the period when the rabbits must be finally dealt with and cleared out of all places where they are not desired to be and to reproduce their kind. Particularly should this be done round the prospective rearing-fields, for young rabbits attract both ground and winged vermin, and the advantage of having the boundaries of such fields free from them is sufficiently obvious.

The matter of rabbits and vermin brings us to the question of traps and snares, nets and wire netting, in connection with which there is often great waste upon the preserve, particularly upon those where such matters are relegated to the under men, and not personally controlled by the head keeper. One of the best recommendations for a gamekeeper in charge is that he can catch all the vermin upon the manor of which he has charge, and be thoroughly able to show his under men how it is done, instructing them not only in the use of all up-to-date materials, but many of the springes and falls of earlier days, and whose employment is so very useful and effective.

The use of the snare for rabbit-catching is a matter which requires much more than a passing interest, because the tendency of the times, irrespective of the Ground Game Act, is to do away with the use of the Dorset trap for rabbit-catching. Thus it is that one of the keeper's duties should be to provide and work all the snares he may require.

The amount of wire netting used nowadays is very large, both for permanent purposes and temporarily for stopping purposes at shooting-time. The same is the case with twine-netting and sewin. These are matters to be

dealt with by the keeper, as well in regard to repairs and storage, as provision for future requirements. Long rabbit nets and the small ones for ferreting purposes come under the same category ; whilst the care and breeding of ferrets are also amongst the gamekeeper's duties.

It is advisable to call attention to the fact that the somewhat frequent practice in which gamekeepers indulge of shooting trespassing dogs is usually illegal and always likely to prove costly. A gamekeeper must not shoot a neighbour's dog when it is trespassing, nor will the plea that it was done to save the life of pursued game avail in a court of law. If dogs trespass on his land he must warn the owner, and inform him that traps will be set. He must not place them, however, in such positions near the highway that any baits used will lure dogs to them. As a rule, his best and only recourse is through the Court for damage done, and with a view to obtaining an order to the owner to have the offending dog destroyed. The notice that stray dogs will be shot is useless as a safeguard for any action in this respect.

It is only possible within the limits of this work to refer to these matters in passing, but those of my readers who require further information in detail as to the working of traps, snares, and the like for rabbits, and the management of ferrets, will find all they require in the writer's small manuals upon the subjects.*

Other points in connection with the duties of the gamekeeper will have to be dealt with in the chapters on poaching, &c., and I will now pass to the full consideration of one of the most important—if not *the* most important—of his duties, viz., vermin catching.

* "Practical Trapping" and "Ferrets and Ferreting," price 1s. 2d. each, post free, from L. Upcott Gill, Bazaar Buildings, W.C.

CHAPTER XXXIII.

GROUND VERMIN: The Polecat.—The Stoat.—The Weasel.

UNDER the general name of "vermin" are included a number of birds and other animals whose natural instinct leads them to destroy birds and other animals of an opposite character, the existence and increase of which are desirable to the game-preserved. The habits and haunts of vermin, although to some a subject of commonplace knowledge, are, to the generality, rather obscure. It is, however, a matter of necessity to the gamekeeper to be well acquainted with the signs of their depredatory habits, so that he may wage successful war against these creatures when they seek to prey upon his stock. Game-preserving is, to a great extent, dependent upon the vigilance with which ground and winged vermin are sought out and extirpated, for the quantity of game they may capture and destroy is enormous. If left unmolested, vermin multiply and increase to such an extent that they would soon clear off all the game.

One common characteristic of them all is a large amount of cunning, and, at the same time, great fear of man being near their habitations or about their neighbourhood. This strongly prevails in all the weasel tribe, and, despite their pluckiness when captured and "cheek" when one comes upon them unawares, their fear of the scent left by man is very pronounced. To be able to cope with them

successfully, an exact knowledge of their haunts and habits is necessary, and although, taken generally, there are points of resemblance between the several species, still in detail they differ considerably.

The polecat, the largest and least plentiful of the weasel tribe, is, without doubt, where it still exists, one of the most rapacious of all vermin. Not only will it kill the animals which are its ordinary prey, but will sometimes attack and destroy all kinds of poultry. A polecat will often in one single night kill more than it could consume in a month. Birds, chiefly game, it catches by stealing upon them at night, and silently inflicting a sharp and quick bite into the brain, which kills them instantly. In this manner, should it come suddenly on a covey of birds, it may fatally wound a large number of them before they are sufficiently aware of their danger to make efforts to escape. Hares it will destroy in much the same manner, and steal upon them during the day when they are complacently dozing under shade from the sun, or at night-time when they are busily occupied in feeding. Rabbits fall victims to the polecat in the same manner that they do to stoats, by the vermin tracking them to holt, and, when there, using their superior cunning as a complete set-off against the knowledge the rabbit has of the many intricacies of its burrow. Rats, too, both those frequenting the water-side and those in corn-stacks, are attacked by the polecat occasionally, the latter more than the former.

In localities where many of these pests remain there is no species of vermin caught, killed, or shot with more satisfaction to either the poultry-keeper or the game-preservee, who may have suffered from their depredations, than the polecat.

Most kinds of vermin possess a foetid natural smell, but the polecat has a most objectionable peculiarity, namely,

the secretion of a substance of disgusting odour near the tail and the power of emitting the stench at will, using it as a means of offence and defence when it is attacked.

The polecat, as far as its colour, &c., go, is not much known, and a description of the stoat is often volunteered to illustrate the larger and more destructive animal. Its head is, comparatively speaking, broader than the stoat's, the nose pointed, the ears are round, slightly haired, and rather inconspicuous; the neck, in comparison with the stoat's, is short. The tail is more inclined to be bushy than is that of the stoat or the weasel, and while much of the shape of that of the ferret, has more hair upon it. In colour individually, polecats differ a good deal, for the reason that there are two kinds of fur on this *Mustela*, one being short and woolly, the other long and more hair-like. The former is of a pale yellow colour, and the latter a bright brown, darkening almost to a shining black; the apparent shade of the animal's fur thus differs according to the respective lengths of the particular hair predominating; hence probably a good deal of the confusion as to these two members of the weasel tribe.

The polecat generally constructs its nest in a rabbit-burrow, and, moreover, one in a light sandy soil. This nest it makes not unlike the rabbit's, but noticeable for the smoothness and great regularity with which the moss, dry leaves, &c., are built together. Occasionally the polecat will scoop out a burrow, or rather a hole, for itself, but it prefers the former and less troublesome way. Sometimes, again, the crevices of rocks of large size form a suitable retreat, and in others a heap of large stones is the chosen place. The young ones number generally four, five, or six, seldom more, and are brought forth during May or June—a favourable time of year for their discovery, capture, and subsequent destruction.

Besides the name of polecat, various others are allotted to this particular animal in different districts, most of them having reference to some attribute. "Fitchet" and "fitch" are names having reference to its hair, and are mostly used in the Western and Southern counties. "Fulimart" and "foumart," both evidently corruptions of "foul marten," are chiefly employed in the North.

The favourite haunts of the fitch are not necessarily in the neighbourhood where it makes its breeding-place, preferably they are at some distance off. The stoat and weasel are accustomed, to some extent, to live in batches of five or six, but the polecat prefers a more solitary existence, and rarely more than two or three live together, and at a fairly wide distance from others of their kind. Small dark fir-woods, with a rough but dry surface of ground, are the most favoured spots, then rough and broken ground, well diversified with large boulders, interspersed with clumps of thick, low, bristling covert, overgrown with brambles and briars, situated for preference along the side of a stream or river, form the places of habitation most agreeable to the polecat. Again, large expanses of oak copse situate on a rough stony hill-side prove acceptable. In fact, any ground well and closely wooded or covered with brake are the places where the polecat makes its haunts. This vermin always destroys the life of its victims by a sharp bite right into the brain, causing, as before noted, either immediate death, or instantaneous stupor resulting in death in a few seconds. None of the other weasels employ this summary mode of killing, and therefore any bird or other animal found killed in this manner may certainly have its death laid to the credit of a fitch. Unfortunately, the fitch generally endeavours to carry away as much of its prey as possible, thus leaving very little evidence

of its depredations, except, however, in the case of poultry, which it rarely troubles to carry. Animals killed by polecats have sometimes apparently been mauled a good deal, that is to say, they appear to have been rolled and flung about. Perhaps the vermin in such cases plays with its prey and lies upon it while sucking the blood—at any rate, an odour of the fitch's fœtor will probably be present, leaving little doubt as to the perpetrator of the offence. Rabbits the fouchart mostly destroys in their burrows, and generally leaves them dead inside, a foot or so from the mouth of the hole; it rarely, however, kills more than one at a time, and will return to the same holt after sufficient time has elapsed for the rabbits to have quieted themselves down again in their old retreat. Pheasants the polecat obtains when they roost low down on trees, and it will often steal upon the sitting-hen and kill her on her nest, the eggs, however, not being molested; hence, if the bird should be warned in time by the excitement of the small birds in her neighbourhood, which may have detected the vermin, she has at least a chance of escape. The way hares fall victims has already been indicated.

The possibility of crossing the polecat with the ferret was at one time a disputed fact. The breed or variety termed "polecat ferrets" is now, however, so common as to have become nearly as numerous as the others. It is interesting to note that Mr. Trevor Battye has succeeded in taming polecats, and breeding from them in confinement, so as to employ them in the same manner as ferrets.

The fitch, when attacked, fights with enormous pluck, and is a queer customer for a terrier, few of which will go in and kill it in the first round. It is an ill-advised indiscretion to corner a polecat, because it will often turn upon its aggressor, and the bite of one is always painful

and lasting, so that in many cases, where the animal cannot be killed without fear of its retaliating, a careful attack must be made.

There is no more to be said concerning the polecat without going into technicalities of little worth to the game-preserved. Now that they are becoming less frequent every year, so do they become more wary and difficult to observe. Close notice and constant observation are absolutely necessary to discover indications of the whereabouts of a polecat; and referring to what has been mentioned concerning their presence, the necessity, when evidence of a polecat's existence has been discovered, of using every endeavour once and for all to find the direction of its habitation, and, having detected it, of employing all the means possible to effect its capture and destruction, is most advisable.

Smaller than the polecat, but considerably larger than the weasel, the stoat may certainly be regarded as the real type of "ground vermin" (measuring over all about 14in. to 15in., of which the tail alone is about 4in.). The stoat and the weasel, in spite of the marked difference in size, are confounded oftener one with another than probably any other British animals; yet, not only in size, but in appearance, habits, and haunts, does the larger differ from the smaller *Mustela*. Rapacious to a degree, and unswerving in its determination to kill, the stoat is, owing to its great numerical superiority over the polecat, at the same time one of our commonest and worst-reputed vermin. Less bloodthirsty and less powerful than the fitch, it has not acquired the same skilful means of killing its captives that is characteristic of the latter animal, and is therefore not so daring or so inclined to be solitary.

When hunting its prey the stoat employs nearly similar tactics to the polecat, pursuing with the same extra-

ordinary acuteness of scent and pertinacity, so that rarely does its quarry succeed in escaping. Hares, chiefly in the leveret stage, seem to the stoat more palatable than rabbits where both are abundant, and upon the former it loves to prey. Being a small and short-legged animal, it is, as far as regards speed, quite unable to cope with the hare, but will run one down in the same determined manner as its larger relations.

When hares are not plentiful, the stoat finds in rabbits an excellent substitute. It is particularly fond of stealing upon them when, half-sleeping, they lie ensconced in their forms, or seats, certainly preferring this mode to the more laborious one of catching them in their burrows, which it does in much the same way as the polecat, only that in both cases, hare and rabbit alike, it kills by fastening either on to the neck of its captive or, like the ferret, below the eye (it prefers, however, the former place), and sucking the blood until its victim expires from the loss of it.

Being an excellent climber, the stoat is a greater enemy of birds than the polecat, and pheasants, as well as partridges, suffer sadly from its depredations; but, unlike the fitch, it has as much liking for eggs and young birds as for the full-grown ones.

The nest, or rather store-house and lair combined, of the ermine is often constructed, as far as safety and concealment are concerned, in a most clever manner, and to this suitably contrived larder it conveys that portion of the number of victims destroyed which are considered fit and acceptable food for consumption. These lairs are generally employed also as the nest in which the young may be born and brought up. The stoat, during this period, namely, while the breeding-season continues, seems rather to depart from its usual mode of diet, and

to obtain little delicacies to suit the fancy of the female, or, perhaps, for the young, that they may consume flesh at the earliest possible stage of their existence. Such "delicacies" generally consist of field-mice, small birds, frogs, an occasional water-vole, shrews, young rabbits and hares, in some cases a partridge, also, but rarely, a woodcock. These are but some of the many animals which the stoat provides for its mate and progeny, and is always most careful to lay or store them in a neat, methodical manner.

Much as the stoat resembles the fitch, so also does it in many ways differ from it, and not more so than in the haunts which it prefers and the habits it follows. With regard to the former, while the polecat, as we have remarked, has an undoubted tendency to become solitary, or rather semi-solitary, the stoat, on the other hand, is inclined to the opposite, and it must be observed that they do not live even in single pairs wide apart from others (the breeding-time, of course, excepted), but congregate in or adjoining some favoured spot in a wood, brake, or plantation, where they form a little colony amongst themselves for mutual protection and defence. Sometimes they choose a small or a large area of rough or broken ground in a field, more especially such heaps of big stones or boulders as we occasionally observe to have been collected from the surface and removed to an out-of-the-way corner, or, perhaps, the very centre of a field; sometimes long rough rows of such stones or boulders, along the side of a stream, and generally plentifully overgrown with briars and rough surface growth. Again, they are found about old lime, gravel, and stone pits, and beneath piles of bark, wood, and faggots—in fact, any place at all resembling one or combining all the features mentioned. In such favoured spots as these does the stoat find a suitable neighbourhood in which to make

its dwelling, consisting mostly of the holes and passages naturally formed when large uneven stones or wood are heaped together, and to this fastness will it always retreat should it consider danger as likely to occur, being able to traverse it with facility, and effectually to "dodge" any animal which may follow it in and which might prove too dangerous an adversary. From these holes they issue at odd times, in ones, twos, or threes, and sally off on their predatory hunts.

Similarly to the fitch, the stoat is also fond of running a hedge before commencing its work in real earnest, probably owing to the fact of its having just left the dwelling in which it sleeps, and where it spends a fair half of its time, or more even, in recuperating its energies. Unlike the larger vermin, however, the stoat mostly, but not entirely, hunts by day, and when so doing generally pursues its operations at or before sunrise, and for an hour or two before sunset, times when the various animals, birds, &c., upon which it preys, are also busy feeding, and generally not so observant of means necessary to their safety.

Compared to the weasel, the stoat is in England generally less frequently met with, but in certain parts it is undoubtedly of much more frequent occurrence than the smaller animal. Its agility is considerable, and in spite of the peculiar length and litness of its body, it can run at a really astonishing pace, at the same time employing very elegant motions, and showing always a very animated appearance, leaping and bounding along in an easy and free-going gallop. As to whether it hunts by scent or by sight, "opinions differ," and doubtless the stoat's opinions differ too, for being an instinctively intelligent little animal, it adopts the manner most suitable to the occasion.

Besides the very general name of stoat, there are a multitude of names employed in various districts to denominate this *Mustela*, amongst which is "ermine," especially when the animal has donned its winter coat. The "ermine weasel" is another mode of referring to this change of colour in the fur. "Stout" and "stat" are but corruptions, while "black-tail" refers to the animal's "terminal appendage." "Mouse-hunter" is an Essex name. To enumerate further names would be a considerable task to very little purpose, for they are mostly employed locally in rural districts.

The best known or summer dress of the stoat is a dull reddish-brown over the upper and outer parts of the body, while the under and inner parts are of a yellowish-white, or rather what is generally termed cream-colour. The tail is, at the root, of the same colour as the body, but deepens off to quite black at the end, about half being one colour and half the other.

The winter coat of the stoat is nearly white throughout, but not wholly so, as it retains in all cases, to more or less extent, a slight tinge of yellow, more especially upon the inner and under portions of the body, but not so noticeably yellow as the white markings of the summer dress. The tail, however, retains its black colour without any change, and contrasts in a marked degree with the rest of the body.

In England the alteration in the colour of the fur is of rare occurrence, except in the higher and more exposed parts of the kingdom. In Wales and Ireland, however, it is occasionally noticed, while in Scotland, in the southern counties, it is common, and in those situated north of the Forth and Clyde very common indeed. Curiously, a nearly white stoat was taken near Chelmsford in February, 1906. Except in the Northern portion of the

kingdom, the change is seldom perfectly completed, and if, as far as colour is concerned, it does take place, still the fur is rarely sufficiently blanched to become of much commercial value. But in the most northern parts the transition from the dark to the lighter coat is generally complete, and there is no appreciable difference between the ermine imported and that obtained from the bleak moors of Caithness and similar counties.

That this peculiar variation in the colour of the fur takes place oftener than is generally supposed may be very likely, but it rarely comes to people's notice, probably on account of its occurring in places which, owing to the roughness and severity of winter on such exposed lands as would most likely cause the change, are rarely, if ever, visited by those persons who take an interest in such matters, and could draw attention to any instances which might come under their observation.

While agreeing as to the cause of this alteration of colour, authorities differ as to the exact manner in which it is accomplished, and even now it is not satisfactorily determined whether the colour of the hair or the hair itself is changed; but no doubt it follows the usual course of such changes, the colour changing in autumn, and the fur being shed in spring.

The weasel, the smallest and commonest member of the tribe, approximates in figure and habits to the larger and more destructive stoat. It is of a very red-brown on the upper and outer parts of its body, and pure white upon the under and inner parts, while the tail is of the same red-brown colour as the body and perfectly uniform. The stoat, on the other hand, is dull red-brown above and a dirty-yellowish white beneath, and the tail is black at the extremity, and longer and more bushy than that of the weasel, while the latter animal is

about half the size of the stoat ; their habits, too, vary to a considerable extent. That the weasel is materially less obnoxious than either of the larger vermin is undoubted, for, besides being a lesser and weaker animal, and consequently unable to cope with so many or so large birds, it turns its attention in a direction in which its habits are not so antagonistic to our wishes as they might be were it to follow more closely in the ways of either the polecat or the stoat.

That the weasel has a predilection for winged game, as far as flesh goes, is obvious, and after that it prefers hares and rabbits, choosing, however, in all cases young birds and other animals where they may be obtained. But far and away is the weasel the most determined and wholesale destroyer of eggs that we have ; not discriminating for one moment between the smallest of our wrens' eggs and the large unwieldy production of the goose, the little animal will break the shell and consume a nestful, or, in the case of poultry, a single one, and break and destroy the rest. A determined and agile climber, no nest is secure from its visits, and, equally rapacious in its pursuit of young birds, the nests are not safe even during the time that the young are being reared, and often does the parent bird return to find the destroyer snugly curled up asleep amongst the dead bodies of its prey. It will hunt the mole, the field mouse, and other small mammals in their usual haunts, not only by the eye, but also by scent ; and most amusing it is to see one of these flexible, agile little creatures tracing up the scent when at fault. It will quarter the ground like a dog till it hits it off, and, to lose no help from the eye, will occasionally sit up, raising itself on its hindquarters to gain a more extended view. Its perseverance will tire larger and stronger animals, nor will water stop it when its quarry

takes to it for safety. No animal is more audacious than the weasel, and few more foolhardy.

The stoat and the weasel both employ the same means of killing by sucking the blood. The latter always fixes itself to its prey just at the back of the jaws and rather under than on the top of the neck, and then throws the hinder part of its lithe and supple body on the back, whether of bird or of mammal, while with its strong fore-legs it endeavours to embrace it round the neck. Similar in nature to the polecat and stoat, the weasel has a habit of killing many more animals than it can possibly consume. Undoubtedly, however, owing to the confusion of the stoat with the weasel, the latter gets credited with a good many of the misdeeds of the former, and, perhaps, also many depredations committed amongst eggs and nests by the weasel are laid to the charge of the stoat.

In much the same manner as stoats, weasels will form themselves into diminutive packs and hunt in company, but adopting a more systematic style of attack; they have a favourite practice of running out from their habitations and making a complete investigation of anyone who may happen to pass.

Not only will the weasel commit the above-named indiscretions, but an occasion has come to my notice when it made a rush at and inflicted a bite upon a dog before the latter was able to turn upon its aggressor. More especially will it attack them when they accidentally come sniffing about the nest, when the varmint becomes literally wild with rage, and flies at the intruder in a most determined manner, often, indeed, lessening any chance of its escape by the foolhardy mode of its aggression.

Many instances have occurred of weasels attacking humankind, and in these aggressive operations they are always numerous enough to cause some trouble to men to

repel the attacks without incurring injury, while women and children have been known to suffer rather severely from their ferocity.

The habits of the weasel and general mode of life differ considerably from those of the polecat and the stoat, while its haunts are still more at variance with those of its relatives; indeed, as far as habitation goes, the weasel lives in a community not unlike that adopted by the rabbit. Whilst the polecat is nearly solitary, and the stoat more sociable than the former, so is the weasel, in the same comparison, more so than the stoat, and more open in the selection of its favourite places and spots in which to form its lair.

Its nest, or place in which the young are born and reared, is generally chosen in some snug corner, well calculated to keep it dry and warm. It is formed of dead leaves and grass, with moss and odds and ends of a soft and dry nature, and, for preference, is made in a crevice in a hedge, bank, the hollow of a tree, between or under a heap of large stones, or in a hole in a stone wall. Sometimes, having turned out the rightful occupier, it will take possession of a bird's nest, which may be suitably situated, and bring up its young in this. The female brings forth at each birth from four to six young, and the number of litters in a year is always two, and sometimes three or even four. The greater part of the food it obtains is carried to the nest, and deposited in its near neighbourhood in some nook doing duty for the store-house, but not such a well-kept one as the stoat's. It will also occasionally form a burrow for its nest, but usually prefers the easier ones mentioned already. When it does scoop out a home for its young, this rather laborious undertaking is made in some dry sandy soil, and is rarely of great extent. It has rather a liking for the runs

of moles, and will often, after having killed off the owner, take possession of the run for the purpose of bringing off a litter of young ones.

The localities which the weasel likes to frequent are similar to those of the stoat or the fitch, and differ considerably from those in which it constructs, or in some cases finds, its breeding-place. Preferring more open and sunny spots, and courting at no time darkness and solitude, the weasels form themselves into communities, ranging in all instances from about six to even fifteen members, generally an equal number of males and females. Affecting always situations of a corresponding kind to those agreeable to the stoat, the vermin under notice, however, choose those situated on high ground, which is well open to the sun, and among the most favoured spots may be enumerated the following, as showing the general nature of the locality in which they may be mostly looked for. At all times stone walls are its special resort, and particularly those rough ones forming boundaries to fields. Along such boundaries bramble and gorse, besides low bushes, are sure to be present, and should this wall be the parting between a covert or a wood, then it is certainly a most likely harbour for them. Again, those small hollows sometimes present in pasture fields—roughly, miniature gravel-pits—which are always partly covered with a rough brake of brambles and the like; along high-banked roads, too, where cutting has been made to acquire a better level, or where the road is cut into the side of a hill; further, by the banks of still flowing brooks and streams, wherever a more than ordinary rough place occurs, or where, perhaps, a dividing hedge or a bank reaches right down to the water; small fir plantations and little woods having a warm and sheltered situation, and that are well open to the sun—indeed, to cut a long list of places short, any of

those mentioned as agreeable to the stoat and polecat, only that they must be light, airy, and warm, instead of being dark and closely sheltered. Such spots do weasels frequent, and forming, where necessary, tortuous and narrow passages leading to some larger ones, they collect together in communities large enough to cope successfully with such enemies as they may have, besides men and dogs. From these dwellings the little animals issue, and going off in batches, seek their prey and pleasure—first, of course, as above noted, eggs and young birds.

The eggs of all game-birds are particularly liable to the attacks of weasels, as they are mostly deposited in such places as are sure to be more or less frequently visited by the vermin; besides, being in all cases on the ground, they are more certain to be detected. Not only are the eggs of game-birds open to the attacks of weasels, but also the young from the time they are hatched until sufficiently matured to take a long flight. Taken altogether, there is some long period during which our partridges and pheasants may or may not have their nests destroyed, and the vermin is a most indefatigable searcher, as noted before, when eggs and young birds are to be obtained. Creeping stealthily up from behind upon the parent bird whilst seated on the nest, the weasel invariably makes a rush to obtain the bird as well as her brood, and unless the vermin is not quick, or, perhaps, strong enough, it generally succeeds in its destructive purpose.

Leverets, also, are captured by weasels, and, in most cases, single-handed—rather a large performance for such a diminutive poacher, no doubt, but still occurring pretty often. On other occasions, however, more than one weasel will attack a full-grown hare, and often a little army of six or seven. Of course, when this is the case, the hare runs but a poor chance, and once caught and set upon is

very soon numbered with the majority. Rabbits are less open to attack than hares, and are comparatively less often destroyed, being more difficult to get at and to cope with. Rarely are rabbits caught whilst sitting out or sleeping; when such a chance occurs the rabbit's discomfiture is brought about in the same way as the hare's, only that generally the particular arrangement of its seat leaves it exposed to an attack in rear. When, however, the vermin discover a solitary one or perhaps two rabbits in a burrow of not too great extent, and there happen to be four or five weasels together, the one which has discovered the presence of the intended prey will screech in an excited manner, and so summon the others which may be near at hand; they will then all enter the burrow at the different points of ingress, cautiously search until the rabbit is found, and endeavour, whilst preventing its escape, to get it in a corner, where it can be conveniently disposed of, or, maybe, it will be allowed to struggle to the aperture of a hole before its destruction is completed. As far as one can ascertain, this seems the probable way in which weasels capture rabbits in their burrows.

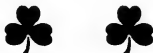
The weasel is a ruthless destroyer of the mole; pursuing it through its dark passages under the soil, the swiftness of the weasel is rather impeded by their smallness, and so the two animals are about upon equal terms, as the mole can often, owing to its superior knowledge, dodge its pursuer. It is quite a common occurrence for the weasel (which seems to have rather a liking for the operation) to chase a mole in this manner, and it is frequently caught in mole-traps.

Respecting the fur of the weasel, it may be said that in the British Isles it never changes its colour in the winter months; but this is not uncommon in other countries, and has occurred in the North of Scotland and in England

during very severe winters, although the change is never wholly complete upon the body, whilst the tail curiously retains its reddish colour, similarly to the stoat. The fur is, like that of all vermin, impregnated with a certain fœtid smell, but not to the same extent as that of the polecat; nor has it the power of emitting any such odour as is the case with that animal.

The name by which this *Mustela* is known pretty generally throughout the country is weasel, except in the Western counties, where it is known as "white-throated fitchet" and "futterit," the latter being also employed in other districts, but sparingly. "Kine" or "cane" is a Southern country name, while other local ones no doubt exist.

Between weasels and stoats there seems to be a sort of instinctive mutual understanding that they shall not work over the same ground, and although the two animals may be found to be pretty numerous on a preserve, they will rarely be taken near each other. This seems a curious trait amongst animals so very similar.



CHAPTER XXXIV.

GROUND VERMIN: The Capture of Polecats, Stoats, and Weasels.—The General Details of Vermin Trapping.

THESE three species of vermin are in their habits so much alike that most of the methods employed for the capture of one are more or less suitable for all. In the means to be adopted there is some little variety, and while never omitting to shoot or kill either of the pests whenever occasion offers, about the only systematic manner in which a continuous and successful check can be put upon their depredations is by traps, and in some cases snares also.

Foremost among the many traps adapted to vermin-catching stands the common steel trap, or gin, which, owing to its cheapness and suitability for nearly all situations and occasions, is usually adopted, while the others are used as secondary aids, or adapted to instances where they may be more likely to be productive of captures than would the ordinary trap. Everyone who may have to catch vermin is familiar with the old-fashioned steel trap, but how to employ it with success and in a systematic manner is not so well known, and but few, other than experienced gamekeepers and trappers, are sufficiently well versed in the niceties of the subject to warrant their taking upon themselves the destruction and keeping down of the vermin which may infest their preserves. By the old-fashioned steel trap must be understood the old-fashioned

style of trap, with its improvements, for the original steel gin was but a poorly-constructed, clumsy article compared with the highly-finished excellent Dorset and other traps of to-day, of which illustrations are given at Figs. 32 and 33. It is not necessary that a trap should be large and

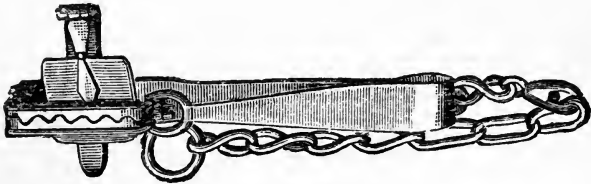


Fig. 32.—Ordinary Dorset Trap.

heavy to be a useful one, nor need the spring be very stiff in order to last long ; on the contrary, it should be fairly elastic and turned low at the bow, so that there is no more

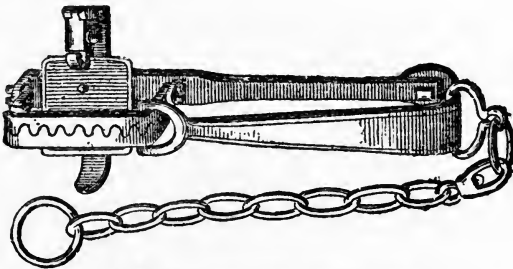


Fig. 33.—Improved Dorset Trap.

trouble than necessary to form a place in which to cover the spring. For vermin it is advisable to be provided with two sizes of trap, the one lot (say one-third of the total quantity) to consist of traps with 3in. jaws, while the remaining larger quantity should have 2½in. jaws. All

these traps must be of the best manufacture, and should fulfil in every respect the description which follows. By far the most important part of a vermin-gin is the spring; this should be strong, but, at the same time, excellently tempered, so as to allow of its being pressed sufficiently low down by the simple grasp of the hand without resort having to be made to any large amount of force. It is riveted on to the back piece—that is the flat piece of iron forming the base of the trap—at about 1 in. from the end, and bent over towards the jaws, which on one side are enclosed in a loop at the end of the spring, that is rounded on all sides so as to give the jaws a full and easy play. These latter are always rounded on the outside, and are toothed in the now usually adopted manner, the sides being fitted so as to leave about one-sixteenth of an inch space between the teeth when the trap is “drawn” or sprung. It is important to give special attention to the spring and jaws of each trap, and to be sure that the force of the spring is not sufficient to cause the legs of a weasel or a stoat to be cut right through, owing to the jaws being, perhaps, too closely fitted for the strength of the spring.

The catch of vermin-traps requires, as a matter of course, to be of delicate adjustment, and should, consequently, be very carefully made and fitted very neatly, so that the step of such a light little animal as the weasel may “spring” it as certainly as that of a rabbit.

For the purpose of preventing the animal, when caught, from hobbling away with the trap, each one is provided with a suitably sized chain, consisting of about eight links, and a swivel, terminated by a ring of about $1\frac{1}{4}$ in. diameter. These chains are in most traps well made, but this cannot be said of all makes, and, being after the trap the most important matter, it is necessary to prove them before use.

The small ring at the extremity of the chain is for what is termed the stake, by means of which the trap is fastened to the ground. Stakes for vermin-traps may be of iron, as supplied by most manufacturers, or of wood. There is also a very effective screw stake obtainable. It is in form like a corkscrew, and is useful in places where the straight stakes fail to secure a grip. Upon the whole, however, I prefer to use wooden stakes, which are best made as follows: Obtain some well-seasoned straight ash boughs of as near as possible 4in. or 5in. diameter, and saw them into lengths of 1ft. Then having split each length into four or six, according to the size of the boughs, partly round and sharpen them off to a point from about 1in. from the top, leaving this part wholly untouched. They should not be made too small, but of such thickness that when the ring of the chain is put on it must be hammered down the last inch of the way, and will be overlapped by the part not rounded. If the stakes are handily made in this manner they will grip the ground exceedingly well, and be found more serviceable than any other kind. It will be also necessary to have a fairly heavy hammer, with the flat head drawn out something like a small hoe. This will be found indispensable when vermin-trapping, for a good many places occur where the gin could not be set without. The most extensive experience in setting traps of all kinds never warrants one in becoming slovenly or careless. To prevent any risk, one cannot set the trap in an easier and safer manner than as follows: Grasp the gin over the spring as near to the jaws as possible, and place the trap on the left knee (which should be slightly bent). This will give one complete power over the spring. Press this down as low as it will go, thus permitting the jaws to be laid open with the thumb and first finger of the left hand, and these, of course, keep as near the outside

of the jaws as possible. Then, with the middle finger of the left hand, press the flap over the jaws and push the plate up from underneath with the third or fourth finger, so that the catch may easily be made to fit in its place and retain the trap as it is. A little practice will soon enable one to set the gin as easily and safely as possible.

The complete setting of the gin is, however, more complicated than just fixing it as a trap, and requires further description. The manner of "tilling" varies, of course, according to the nature of the surroundings of a given spot. It must be borne in mind that the more cleverly the trap is concealed, the better chance one has of obtaining a capture, and unless the covering placed upon the gin resembles very closely what the ground was before it was cut away for the purpose, the vermin will very quickly descry the disturbance, and, suspecting something dangerous, will be careful to steer clear. If the surface of the spot chosen be grass or other herbage, commence by placing the trap upon the ground in the position it will presently occupy, with the spring and chain extended towards the right-hand side when looking at what may be termed the front of the site, or, in other words, towards the right of that side from which it is supposed the vermin will approach. This done, drive the stake straight down until the head attached to the chain is about in. below the surface of the ground. Then, keeping the trap extended so far from the stake as to allow a little play for the chain, dig out with the flattened end of the hammer a square hole just large enough to contain the jaws of the trap when open, endeavouring so to form the hole that what is dug out comes off in a little square; then further dig a sort of flap of turf along where the spring lies, and scoop out the earth from underneath this flap. Now try the trap to this form, remedying any little

inequalities that may exist, and hammer the ground flat in the square where the jaws will lie. It will also be necessary to cover the chain, which may be done by cutting a similar flap to that described for the spring.

When the place is considered quite suitable, set the trap and place it in its position, which will necessarily bring the flap and catch of it opposite the trapper; then insert under the side of the plate, and over the jaws nearest, a small piece of wood, or a twig, to prevent the gin from what is termed springing or drawing. Of course, these vermin-traps are all made to discharge very easily, and with but little pressure, and it is, therefore, advisable to observe that the covering should be done in a most careful and light-handed manner. As the trap is set in grass, it will be, of course, necessary to employ grass or herbage for covering purposes, and to do this effectually pluck some very short grass, and sprinkle it all over the plate and jaws, as well as the top of the stake, which is up to the present unconcealed, then with some small pieces of wood and twig gently flatten down the grass, whilst carefully sustaining the plate by means of the twig inserted beneath it.

When made on plain earth or on ground with a very scanty supply of grass, there must, of course, be some slight variation in the manner of setting. Instead of the more easily manipulated grass, earth has to be employed for the covering of the jaws, and in such cases, having covered the spring and chain in a manner which is too obvious to need description, form a square for them. Then obtain some nice fine earth devoid of stones, and heap round the sides of the jaws in little ridges, and while carefully preventing the plate from falling, smooth over the earth with a piece of stick, or oftener with a knife. This is the most effective manner of covering that

may be recommended in this instance. It must always be borne in mind that the trap, to be at all effective, must be quite unobservable by the vermin, and this result must be obtained by copying, as near as possible, the aspect of the spot before it was disturbed. There are, of course, many places which are situated very differently from the two kinds described above; but the best means of concealment will suggest themselves as the cases occur.

Not only must care be taken in the setting of vermin-gins, and, indeed, vermin-traps of all kinds, but, it should

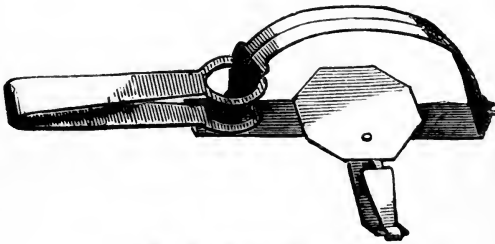


Fig. 34.—Musk-Rat Trap.

be remarked, the less the hands are employed about them, the less likely are the vermin to be scared away by any scent left; for, as mentioned in a previous chapter, vermin are not so much afraid of the actual presence of man as they are of traces of him.

Vermin-trapping may be pursued to a reasonable extent throughout the whole year, but early spring, when there is an abundance of young birds and small mammals, and all through the winter, so long as the ground is not too hardly frozen or too wet, are the seasons most suited to it. Summer and autumn are not so favourable, and unless one takes considerable trouble about the traps only poor results are obtained.

In addition to the ordinary Dorset trap there are one or two others which have been employed with advantage for

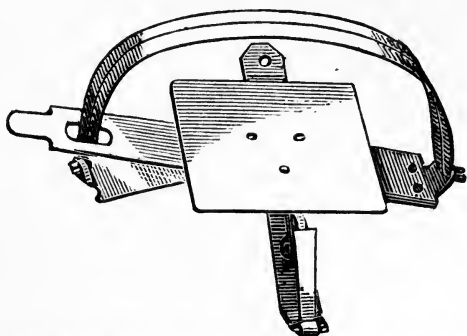


Fig. 35.—Musk-Rat Trap, Single Spring (American Pattern).

taking stoats and weasels, besides the polecat, where it abounds. I have used the Musk-Rat traps made by

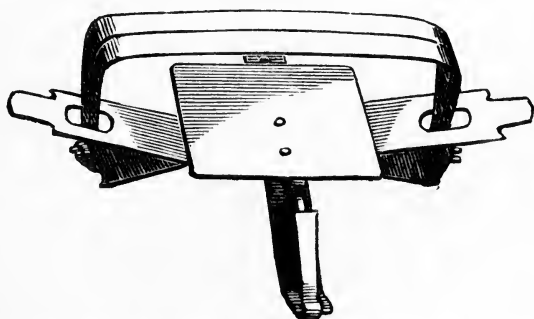


Fig. 36.—Musk-Rat Trap, Double Spring (American Pattern).

Henry Lane, of Wednesfield, Staffs., with the greatest success, and, as will be seen from the illustrations given of them (Figs. 34 to 36), they are remarkably handy, being

very light, easily set, and capable of being placed in many situations where the vermin run where a Dorset trap would be quite unsuitable. For these traps I employ specially light steel chains, with two swivels fitted, and iron stakes.

Everitt's Safety Vermin Trap is a useful addition to the foregoing, and can be employed successfully for stoats and weasels, especially when necessary to use traps amongst winged or ground game. The nature of the trap will be apparent from Figs. 50 and 51, p. 360, but it requires to be worked under special conditions, a bait being used, and the trap so set with covering of brushwood, &c., as to induce the vermin to attempt to pass through it to reach the lure. They are useful round about coops, or if placed between two drain-pipes through which vermin are fond of running, and in such similar positions as may suggest themselves as occasion arises.

The foregoing traps may be regarded as the vermin-catcher's main implements, and upon them he must rely for the most part. I shall describe some other traps presently ; but, in the meantime, the proper means of employing these kinds will be explained.

Before going further, however, the question of baits requires consideration. Of course, the best bait one can have is the remains of any creature which a stoat, weasel, &c., may have killed, and recently left for one cause or another. The vermin invariably return to it, and finding anything of the kind, the keeper should, of course, trap beside it, leaving it, however, in the same position as he may find it. Otherwise, baits should be chosen with a view to the probability of their occurring where put down. Small birds and rabbits, the remains or entrails of larger ones, pieces of carrion—liver, lights, or heart for preference—are the most generally applicable and efficacious. Fish is of little value, although frequently recommended ;

but the dead bodies of others of their kind possess a rare attraction for all the weasel tribe, and can usually be turned to better account than by being paraded in that abomination, a "keeper's larder."

Besides the employment of a bait exactly at the trap, steps may be taken to entice the vermin towards it, chiefly by means of drags or false trails, drawn out in radiating lines, so that any stoat or polecat at a distance of, say, 100 yds. to 200 yds., coming upon one, follows it up, and is thus lured to the gin. Two modes of forming these drags are effective. For the first, a sheep's liver and lights should be obtained and chopped up very small, care being taken not to lose any blood. Mix with this a small quantity of oil of aniseed, and place it in some vessel in the sun until it becomes fairly putrid. This desirable result obtained, make a small bag of coarse canvas, and place the drag in it; having tied this up, draw it after you while the traps are being set.

A second method is to obtain a good quantity of dried or even fresh sprats, the former being preferable; pound them up in a mortar, and having placed them in well-corked pickle-bottles, hang them up where they will be exposed to the sun for some ten days until they are thoroughly decomposed. The oil contained in the fish is thus obtained and has a particularly pungent odour. This oil should be rubbed on some cloth or flannel, a bunch of saturated material being dragged about similarly to the one first named. Some essence of musk or oil of aniseed added is perhaps an improvement.

When employing the steel trap, it will be necessary, as a preliminary, to discover whence the vermin come whose capture is desired, then to ascertain as far as possible where they have their hunting-grounds. When polecats, stoats, or weasels leave their habitations, they generally wend

their way towards any gap or gateway in the immediate neighbourhood, where they are almost certain to stop and to rub themselves against the bars and posts, or perhaps against the rough tree branches which may represent a gate. This propensity on the part of the polecat, stoat, and weasel exposes them to considerable danger, for the opportunity is offered of employing a trap or two, with almost certainty of success. If the barrier be a proper gate, or such bars regularly fitted as often do duty for the same, then the gins should be placed under whatever may form the division (provided always that this latter be not too low) where there may appear to be the run of a rabbit or any similar track. A second trap should be placed at the end of a gate, between it and the post to which it is hung. If there be again a space between this latter and the wall or bank which forms the fence of the field or covert, another gin may be put here; also, if an opening of a like nature exists, on the opposite end of the gate. Should there be a good clear passing place at either extremity, then one of the gins placed there will be most likely to effect a capture. In order to till the trap in a satisfactory manner under the gate, it should be opened and fixed back; the person setting the gin should be, preferably, on that side of the gate opposite to the one towards which it opens. The actual setting of the gin is in no way different from the manner already described, but when it is set, a flat stone or two may be placed on the side opposite to the spring, which must be put parallel with the line of the gateway, and a few bits of briar bush and grass be placed on the opposite side to the stones, so as to form an artificial run under the gate when it will be again closed; by way of this run the vermin will perceive it is apparently easiest to pass. The gins set between the gate and the hanging-post, and between this and the wall,

should be placed one with the spring inside the field and the other with its spring outside the gate, so that on each side one fair trap is offered.

These gins, as will be seen, do not require any bait, but the employment of one of the " drags " already described, and in the manner named, will be found advantageous, and likely to lure vermin towards the gateway, where the tracks come to a centre at the gap in which the traps happen to be set. There are often in close proximity to gates and openings in hedges or banks some large stone, or perhaps a heap of small ones, deposited there to be out of the way. Such are likely places where vermin would come and rub themselves, which they do in much the same fashion as a cat. Here, again, an obviously favourable chance is presented for effecting a capture, and one or two gins may be artistically placed in close proximity to, and at the bottom of, the most forward part of either stone or heap of stones. A varmint passing such an eminently suitable place for rubbing itself against is almost sure to get into difficulties with any gin that may be set. If this manner of tilling is relied upon, no bait is required ; but if the spot be chosen for and considered a good place at which to use bait, the most suitable of those enumerated may be employed with a trap set accordingly.

Another suitable position for the gins is along a rabbit-run that has been formed parallel to a hedge or a bank containing rabbit-burrowings, and about two or three yards out from it. There the traps may be placed right along the run at irregular intervals of from 6yds. to 15yds. or so, but precaution must be taken to set them, not on the flat patches of the runs, but on that part where a rabbit, should it pass, would not put its feet. This particular must be remembered when placing gins on rabbit-runs, for in any place where these animals are at all

plentiful they would be continually getting caught ; but should the gins be placed as noted above, eight out of every ten rabbits which may pass along the run will do so untouched, and without moving or throwing the gin. This will, however, sometimes occur, for the reason that one must fit the catch of the trap only sufficiently fast to keep it set, as it is not advisable, in fact is not correct, to set vermin-traps as tightly as those intended for animals of much larger size, such as rabbits, &c., on account of the very slight pressure the tread of a weasel or a stoat bears on the plate of a gin.

As baits for any traps which may be set against stones placed, as before described, along hedge-banks, the best to employ are either a portion of a rabbit, cut so as to expose the flesh, or of a bird of some sort. It must be placed and fastened by some means on to the stone, or whatever it may be, in as close proximity to the gin as may seem advisable, so that when the vermin, having scented the bait, approaches to reach up to it, the spot upon which the trap is concealed may appear the most convenient place whence the tempting morsel may be obtained.

The corners of a field which vermin may frequent are also by no means unsuitable places, and are in many cases very fruitful of catches if the traps be cleverly lodged. In such cases, of course, baits are most necessary, and I generally prefer some " high " smelling means of enticement, such as a piece of putrid meat, the paunch of a rabbit (including the liver), or, perhaps, a jagged piece of a dead fowl, or anything of a similar character to these. The bait, then, should be dropped as near to the corner as possible without being too exposed, and if the ground be pretty thickly covered with rank grass or such like herbage, a fairly distinct pathway should be formed

for about a yard or so through it, at the end of which sort of artificial track the allurement may be dropped. In the run thus formed the trap should be placed with the spring, of course, at right angles to the parting, and it must be carefully set and covered. In a similar way, opportunity may be taken to place some gins upon the top of the hedge, and, under these circumstances, it often happens, when two hedge-banks intersect each other at right angles, in a case where "conies" may be fairly numerous, that two well-defined runs will be formed along the tops. Such runs are much favoured by stoats and weasels when upon their marauding expeditions, and if a bait be placed at the crossing, it is certain to be remarked. For this purpose a bird, such as a pigeon or a small chicken, may be suspended in the air by means of a stick affixed at the most suitable point, and, moreover, just sufficiently high to be out of the reach of either varmint. This will cause any one of these animals that may be passing to stop and try to obtain it; hence it is obvious, if a gin be skilfully tilled exactly under the bait, a weasel or a stoat cannot fail to be entrapped.

Dry ditches adjacent to the hedgerow, or if of some depth, running across a field, are also capital situations for gins, which may be placed at intervals of considerable length along the bottoms, a drag being employed to attract the attention of any vermin to the ditch. In some cases drains or dry watercourses for irrigating purposes pass under and through a hedgerow, and just in the centre of the portion of the ditch covered by the bank a trap may be carefully set, as likely to prove efficacious. Mouths of such little bridges, or rather coverings of gutters, as are provided for the easier crossing of carts, &c., are very suitable and, in some cases, fruitful situations for two traps, one at each extremity. In such case no bait is necessary.

If it be discovered that there are vermin located in a plantation or a small wood, should there be an earth bank round it with a gapway partly filled with dead briars, thorn-bushes, pieces of tree-branches, &c., a run will probably exist through this conglomeration of stoppings, and a trap may be set on the inner side of the gap at the extremity of the run, that is, where the run emerges from the briars; but if there is not already a track under and through the stoppings, one should be made by thrusting through a good-sized stick along the ground; by working it well about in a skilful manner, a good and tempting passage through will be formed—just the style of entrance to its neighbourhood that either one or all of the favoured three would desire.

When baits are used to lure the vermin into the trap, the situations and surroundings need not be so minutely considered as in other cases, and the distribution of the gins may be more indiscriminate. The most suitable spots are along hedges or banks near to or enclosing a wood, plantation, or copse, at the corners adjacent to gates and gapways, about good-sized heaps of large stones, and in and about small pieces of low rough covert. Further, all along low earth banks running right across some plantation, and similar dry ditches to those already mentioned; about the edges of any small pits that may exist; or, if a rough road runs through the wood, along the sides of this; besides any drives and trigs made for sporting purposes. All these are eminently suited for the situation of a number of vermin-gins, and they have the further advantage of being easily found.

The bait best used at these spots would be either a young and newly-killed rabbit, or a bird of some sort, preferably half a wood-pigeon, a blackbird, or even a dead partridge. This should be firmly pegged down to the

ground in about the position it would be when dead, and the trap set at its back, a little above the shoulders, the spring pointing at right angles to the bird or rabbit.

It is not inadvisable, when trapping under these circumstances, to make a slight alteration in the manner of "tilling." Instead of extending the chain to its full length before driving in the stake, first place the trap in position, and, after the latter has been moved, drive in the stake first, under the place where the spring encloses the jaws, and let the spring lie upon the chain. Naturally the place hollowed out for the reception of the spring and chain must be made sufficiently deep to receive both with ease. With the exception of this slight difference, the actual setting is in every way similar to the other manner; but it is necessary to impress upon the trapper the absolute necessity of covering the trap with the utmost nicety, and on no account to hurry over this work in a slovenly manner.

At this point it may be advisable to describe a further mode of covering the jaws and plate of the gin, which, while necessitating more than ordinary precaution in its manipulation, is, except during extremely hot weather and on places much exposed to the sun, in no way superior to the manner described above, but, under the conditions named, is perhaps preferable to the more general method.

Having placed the trap on the ground, and noted its outline, cut out a square just large enough to contain the jaws, as already described, and be sure to obtain the piece of turf whole which comes away. Then set the trap, and cover the spring, &c., in either of the indicated ways. Next, with a knife, cut away the under surface from the square of grass until this is as thin as it may be without causing the slice to fall to pieces. Then, whilst carefully

sustaining the plate, with a knife, or by other suitable and safe means, place the square of grass neatly on the plate of the gin. It should be of such a size as just to fit within the square of the jaws; then, by pressing the grass upon the other side towards the inner one all round the trap, the necessary covering is completed, and the twig used to support the plate may be drawn away, and the "tilling" is accomplished. This mode is, however, a more risky one as far as the fingers are concerned, as the trap must be most carefully set.

The position of the bait is also an important matter, and whenever it is placed upon the surface of the ground it should be securely pegged down, so that the vermin attracted to it may endeavour to obtain it by pulling first one side and then another, so as to bring it into the trap, which it would not do were the bait unsecured. Sometimes it is advisable to suspend the lure on a tree, and in these instances its height from the ground should be just sufficient to prevent any varmint from attaining it except by standing where the gin is concealed.

All the methods above described for capturing vermin comprise those suitable for either the stoat, the weasel, or the polecat, and according to the locality, appearances, and general surroundings, it may be judged which animal is more likely to be captured.

Weasels, however, will most probably be caught when the bait consists of eggs, but an occasional stoat may fall a victim. Eggs may be employed in all the positions named except the last, and for economy's sake the bait may sometimes be feigned. Reserve all egg-shells from the breakfast-table, fill them with moist clay, and fit into each a small peg by which to stick them up on the ground, three, four, or five together; afterwards form a rough sort of nest round them and set one or more

traps close to the nest. Another method to employ eggs is upon the sloping bank of some pond or stream. In this case cut a good large sod, one with rushes growing on it, and of about 2ft. by 18in. measurement, and having placed it at the edge of, and projecting into, the water, form at the further extremity a sort of small nest, in which deposit, say, three eggs, and "till" the trap on what seems the most likely part of the sod, covering it up in a careful manner.

When the capture of vermin along the sides of water-courses and rivers is desired, somewhat different methods must be observed. Of course, conspicuousness of the bait is the chief thing, and its situation where most likely to be discovered the next. Such hedgerows as run down nearly to the edge of the water, and then fall away in height rather suddenly, may be chosen; while any large and noticeable boulder upon the bank, standing pretty clear of others or upon a high and overhanging part of the land, may also be decided upon for a trap. In such cases it is optional to employ fish as the lure, and if a rather stale unsalted haddock or two can be obtained, pieces of these may be used with a fair amount of success. Polecats and stoats are generally captured about water, and if the ground at the side be rocky and worn from the effects of overflowing, the former are sure to pay visits to ground so admirably suited to their tastes.

Besides those methods already enumerated, a further manner in which to employ the gin for vermin capture is at the outside of rabbit-seats, substituting, however, a dead rabbit for the owner or usual occupier of the place. This is often a very productive mode, and is specially suitable in fields where patches of gorse have been allowed to grow up, and in small pieces of sandy common in which the furze is the only covert. If some slight

search be made in these latter, several places will be discovered where certain rabbits have formed seats under small but thick-set bushes of the gorse. In those of sufficient length for the method to be practicable, a dead rabbit should be propped up to represent one sitting in the retreat, and a trap set at the entrance, and one at the back of the small sort of tunnel which exists. In most cases, the vermin, seeking capture of the rabbit, will be trapped in the one set at the back, so that it is not advisable to omit the second tilling.

A modification of this, and one eminently suitable to small level openings in a plantation, is to form a small oval enclosure of little branches, preferably of thorn, sufficiently closely placed to prevent the ingress of vermin except at the openings left. The sides should be about 1yd. long and 18in. apart at the widest, and ought to slope sharply towards one another at each end, leaving two narrow entrances, just about the size which a gin would nicely fit. In the centre of this fix up as bait either a dead bird, rabbit, or some other morsel likely to tempt the vermin which may have detected the lure to endeavour to obtain it, which desirable end may only be achieved by its passage through one of the narrow openings; each one, however, must be carefully provided with a neatly tilled gin, ready to capture any intruder that may venture thus far. This mode requires some amount of care and trouble, but is sufficiently productive of good results, when the site is well chosen, to warrant its adoption in such places as the trapper may deem satisfactory. Everitt's trap is very suited for work under these conditions.

Parks, and especially those surrounded with close palings, are favourite localities for vermin, and many opportunities round these wooden fences are offered for employing traps. The kind of paling alluded to is that

formed by thinnish lengths of boards made to overlap one another longitudinally, and nailed on to square lengths of wood which run along from post to post about 12in. from the ground. Vermin are extremely fond of what is generally termed running the posts, which consists of jumping upon these horizontal pieces, and, while scuttling along them, rubbing themselves against the inequalities formed by the construction of the fence. Now, if some unbaited and even uncovered gins be placed at rather wide intervals along the wood described, when vermin exist to any appreciable extent in the enclosure, they are sure to get into the traps so placed. The polecat and stoat are very addicted to this practice. Further, if a deep cut be made into the gate-post about 1ft. to 18in. from the ground, forming a sort of platform in the side of the wood, and a gin be here placed, a varmint is almost sure to leap up if the hole be noticed.

Of course, it is a very difficult matter to mention all the various particulars which go to warrant the setting of a trap in a particular place; but I hope I have enumerated the characteristics of some of the most obvious spots. In collecting them I walked over a preserve, and noted them down as they occurred, this seeming the most likely way of making the suggestions useful.

I have elaborated, moreover, the details of trapping these ground vermin to an extent which will not be possible in connection with every kind of vermin referred to in this work. Rats will be dealt with separately; but as I shall have occasion to refer to this and the following chapter from time to time, the reader intent on the taking of vermin generally should make himself thoroughly acquainted with these two chapters.

CHAPTER XXXV.

GROUND VERMIN: Capture of Polecats, Stoats, Poaching Cats and Weasels (*continued*).

I HAVE now mentioned all the more practicable uses of the gin when employed for the capture of vermin, and will pass, therefore, to traps of different and, in some cases, more complicated construction, nearly all of which kill when they catch. Amongst these, the cheapest, most useful and successful, is what is called the "Figure of Four Trap." This trap derives its name from the fact that a flat heavy weight is supported by an arrangement of three pieces of wood so cut and fitted together that they resemble a 4, and from the end of one of which pieces is suspended a bait, so that the slightest touch from any varmint causes the whole to collapse, the result being that the luckless animal, whatever it may be, is crushed by the falling weight.

There are one or two different ways of making the 4, the best being as follows: The trap consists of three unequal lengths of wood (see Fig. 37); the longest piece (A), named generally "the stretcher," should be 13in. long, $\frac{1}{2}$ in. wide, and $\frac{3}{8}$ in. thick; it should have three notches cut in it, about $\frac{1}{8}$ in. deep, two close to one another at one end, and the other cut in a slanting direction, $4\frac{1}{2}$ in. from the last of the two at the extremity; the centre notch, it will be observed, is cut slantingly, and at the same time in

an opposite direction from the other two. At the other end of the piece a hole is bored by means of which the bait is secured. *a* shows the manner of cutting the notches. The second piece of wood, termed "the slanting stick" (B), ought to be $6\frac{1}{2}$ in. long, $\frac{3}{8}$ in. wide at the smaller end, gradually increasing to 1 in. at the other. At this end cut a notch about 1 in. from the extremity, varying the distance more or less, according to the respective heaviness or lightness of the stone employed for dead weight. In order to cut the slant upon the correct side, hold the piece of wood with the notch underneath, and resting upon its point, and

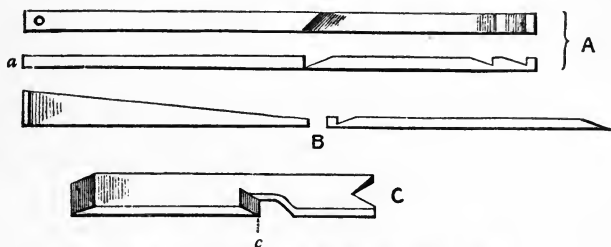


Fig. 37.—Parts of Figure-of-Four Trap.

cut the slant on the right-hand side. The upright should be 7 in. long over all; from the forked end to the notch 3 in. The notch itself should be $\frac{1}{2}$ in. deep, and to cut it neatly and correctly make a slit in the wood (at *c*) $\frac{1}{2}$ in. deep; then having placed the piece upon its edge, cut out the notch on one side of the slit and the curve on the other. The correct manner of cutting and the position of the notches are best seen by reference to the illustration.

The other essential in this trap is either a good thick slate or a flat stone, about 18 in. square (Fig. 38, D); or if these be not obtainable, a board cover may be employed, but this will obviously require weighting. Of course, either of the former is infinitely to be preferred.

To set the trap, first attach the bait to the stretcher A by means of a piece of wire, allowing it just to hang on the lower side. It is not advisable to employ any thick, hard bait that will prevent the cover weight from falling flat upon the ground, otherwise the vermin may be unhurt and squeeze itself out at the side. Next place a piece of slate, or a flat level stone, about 2in. or 3in. wide—it need not be shaped in a regular manner, and for preference otherwise—upon the ground, just about on the line where the outside edge of the trap will rest when fallen. Upon this, and with the side shown in the illustration to the front, place C, then put the notch of B on the point of C, the small end outside the notch in the slanting-stick alone supporting the stone or slate which may form the cover. Take up the stretcher A, and fit the point of the slanting-stick B into one of the notches of the stretcher, whichever may seem more suitable; place it transversely to the upright, fit the slanting notch to the notch *c*, in C, and having found, by gently releasing the hold, that all the pieces catch together, the figure of four is formed and the trap remains set, as shown at Fig. 38. If the directions given regarding the trap be carefully followed, the setting will be accomplished at the first endeavour.

Naturally the ground must be level, and it must further be observed that it is desirable that the surface at the open end should slant down a little, otherwise the stretcher may be broken by the weight of the falling cover. No more complete and instantaneous collapse than that of the "four" when the bait is touched can be devised, and only exceptional cases of the parts jamming occur—in such instances, frost or wet is invariably the cause. This trap is of course one of the cheapest that can possibly be made, and as large a quantity as may seem necessary can be provided, the cost being really nominal, and the

only trouble in making is the correct and careful cutting of the wood for the figures of four. The best wood is well-seasoned ash or deal, as these lend themselves more easily to manipulation than others. What is gained in the handiness of the deal is compensated for by the superior quality of the ash. When making a quantity, a plan to be recommended is that twelve of each piece be made at a time, and by forming and cutting the wood into

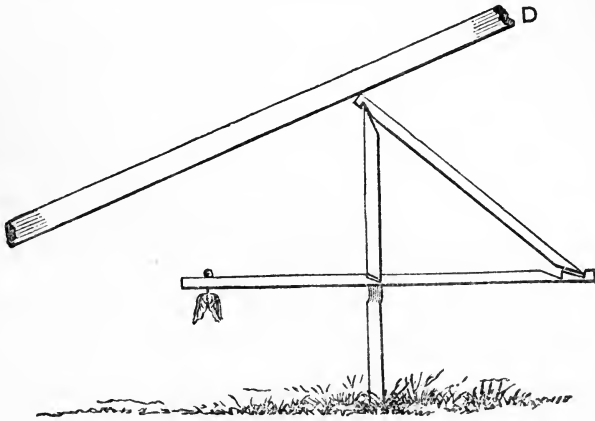


Fig. 38.—The Figure-of-Four Trap when set.

suitable lengths, time may always be gained, not to mention the superiority that will be apparent in the work. The pieces, of course, must not be left white, but coloured to be in unison with the surroundings, and for this purpose a good rub over with mud is necessary; besides which a little smearing of rabbit's liver, or other suitable allurements, should be given just before setting the trap. For baiting, a piece of flesh of some sort or other ought to be chosen; portions of the neck of a chicken or similar-sized bird are excellent.

Referring to the measurements given, those stated are the ones best suited for stoats and weasels, but for polecats the height of the upright may be increased, the additional length being added between the foot and the notch, say 2in., but not more. In practice, the trap is not a great favourite of mine, as it is inconvenient and difficult to hide, besides which so many animals and birds other than vermin will spring it; but as a trap to be employed in plantations, and in places where traps are liable to be stolen, it is of considerable use. A figure-of-four offers no inducement for removal.

The "most likely places" for these traps exist along hedgerows where a rabbit-run up to a burrow in the bank passes under briars or furze. Here it may be successfully used, while all similar spots in wood and covert may be likewise tried. Nearly all the spots mentioned as suitable for the gin are equally so for the figure-of-four, and will recommend themselves as they occur.

The next trap on the list is what is generally called the "High Elms" trap, and one quite as efficacious for the capture of vermin, yet entailing some little expense, being of a more complicated nature. However, any shortcomings on this score are amply compensated by the excellence of the trap; besides the extent to which it may be employed, and the wear and tear it will sustain warrant its adoption as one of the best means of capturing vermin. Figs. 39 to 44 represent the component parts of the trap, and, as it cannot be purchased, it will be described in detail, in order that its construction may be the more easily accomplished.

Fig. 39 represents the floor or bottom of the trap, which requires to be 22in. long, 14in. wide, and about 1in. thick. It must be made of two pieces of board as shown, in order to admit of the trigger being fastened on to one

edge by means of a screw. For the admission of the treadle (Fig. 40) a strip is cut out at B, 9in. by 6in. long,

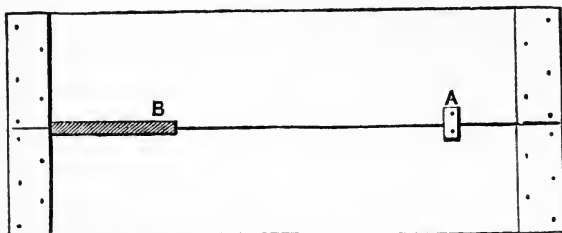


Fig. 39.—Floor of "High Elms" Trap.

and $\frac{1}{2}$ in. wide. The two pieces of wood are nailed together with two strips, each 2in. wide and $\frac{1}{2}$ in. thick.



Fig. 40.—Treadle of "High Elms" Trap.

A is the spot where the stanchion (Fig. 42) is screwed on. Fig. 41 is the cover or lid, which may consist of one

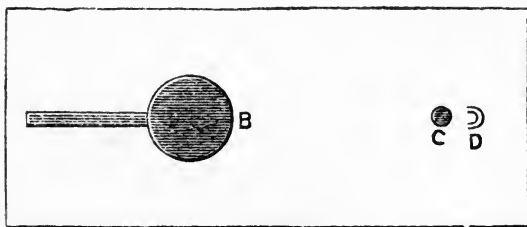


Fig. 41.—Cover of "High Elms" Trap.

piece, or be made of two, similarly to Fig. 39. It requires, however, to be 2in. shorter, but is equally broad.

B is a hole about 3in. in diameter, and ought to have its centre $4\frac{1}{2}$ in. from the back end of the cover. A piece $\frac{1}{2}$ in. wide is cut out from this hole towards the edge, in which the neck of the trigger may work. A hole is provided at C for the stanchion to pass through without touching the sides. D represents a staple, into which the end of the lever fits. This staple is sometimes dispensed with, and the means shown in the drawing of the trap set is adopted instead, namely, a nail is driven sideways through Fig. 43 at its point, and the two projecting ends are held by two staples.

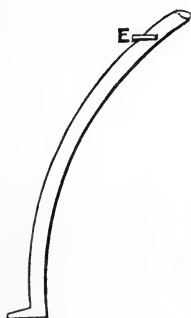


Fig. 42.—Stanchion of "High Elms" Trap.

Fig. 42, the stanchion, must be of $\frac{1}{2}$ in. round iron, flattened out at the foot, as shown, and bent to a radius of 15in. About $\frac{1}{2}$ in. or $\frac{3}{4}$ in. from the opposite end a pin (E) about $\frac{3}{4}$ in. long must be riveted on, so as to stand out at right angles upon either side. Its thickness should be such as will easily fit the hole bored through Fig. 43 at F. The stanchion must have two holes in the foot, through which it can be screwed down to the floor at A. Fig. 40 is the treadle, measuring from the notch at G 4in., and the

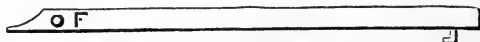


Fig. 43.—Lever of "High Elms" Trap.

rest 3in. The plate is of sheet iron, round, and measuring $3\frac{1}{2}$ in. in diameter; it must be riveted on at H. Sometimes it is formed as shown in Fig. 45 by the dotted outline in A. The lever (Fig. 43) is of wood, $\frac{1}{2}$ in. thick, $\frac{3}{4}$ in. wide, and long enough to reach from the staple (D, Fig. 41) to the notch at the top of the trigger. Two

inches from its extremity is a hole (F) for it to slip on to the pin (E, Fig. 42) in the stanchion, and at the other end a nail or bent wire to catch the notch of the trigger. Fig. 44 is a round piece of wood or iron 4in. in diameter, with four holes drilled or bored in it. To this is tied the bait.

Fig. 45 represents the trap when set. The floor and cover are hinged together by old stirrup-leather, or as desired. In order to set this rather complicated trap,



Fig. 44. — Bait Plate of "High Elms" Trap.

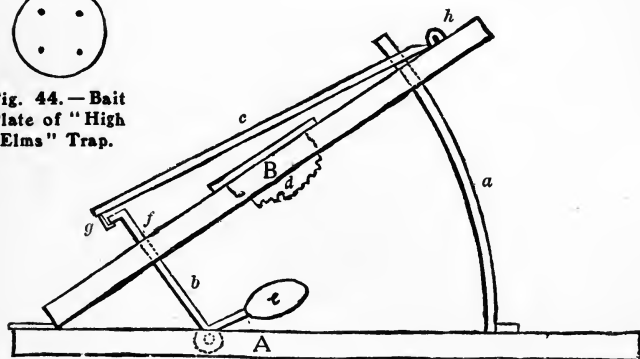


Fig. 45.—The "High Elms" Trap Complete.

A, Platform. B, Cover. a, Stanchion. b, Treadle. c, Lever. d, Bait. e, Treadle-plate. f, Slot for Stanchion. g, Catch. h, Attachment of Stanchion

first fix the lever upon the pin of the iron stanchion, raise the cover till the end of the lever will nick under the staple, press the other end down and let the catch of the lever fit with the catch of the trigger. The lid should now be weighted with stones; tie on the bait and simply drop it on the hole, with the lure downwards. The action of the trap is now obvious, for the vermin attracted, reaching to smell or endeavouring to attain the bait, puts its feet upon the trigger-plate, which naturally causes the

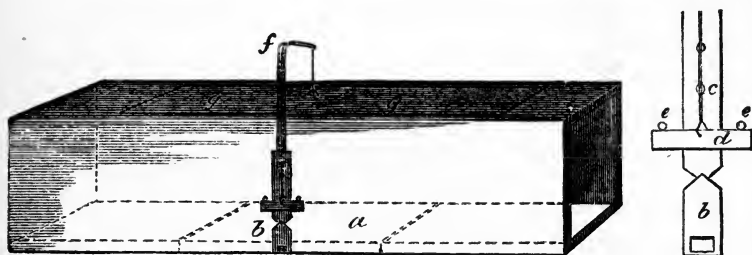
weighted lid to fall and crush it. Some nail on to the cover four narrow strips of hoop iron; this may be done if wished, its object being to prevent the vermin if only slightly caught from squeezing out at the side of the trap. It is advisable, of course, to colour the trap with mud, or to stain the wood with tan. A mixture of $\frac{1}{2}$ oz. of alum, 1oz. of burnt umber, $1\frac{1}{2}$ oz. of lampblack, dissolved in about a pint of porter, used as a paint, gives it the colour of an old slate. The catches forming the actual trap require a little oil now and then to prevent rust and consequent jamming. This dead-fall may be employed anywhere, at any time, and its use in nearly all the situations appearing most adapted to it will probably, or rather, certainly, be marked by its great efficacy, as concerns the capture of stoats and weasels, besides polecats.

Another trap that may be brought into use for the purposes under consideration is what is known as the "Break-Back Rat Trap." The smallness of the make, however, precludes its employment except for weasels, but if a handy ironmonger happens to be in the neighbourhood, he will probably be able to turn out a dozen rather larger upon the same principle, if practical instructions be given him, with such differences as to improve the trap for the purposes for which it is required. Often in country towns, under the name of ironmongers, there are men who are very clever in turning out little things like this. When the "break-back" is used it must be covered over upon the top and hidden as much as possible. The situations for it do not vary from those for the gin.

Its action is something like that of the High Elms trap, but instead of the cover falling, a spring wire raised to the lid is held there in suspension by a sort of trigger, which is released by the vermin touching the bait, when the spring flies down, and, as the name of the trap

implies, breaks the back of the animal. A very excellent mode of varying this trap so as to be more adapted for vermin-catching is, while making it twice as large, to substitute for the hook upon which the bait is hung the trigger arrangement of the High Elms trap.

At Figs. 46 and 47 is given an illustration of the Dead-Fall Trap, which is very useful for vermin like the stoat and the weasel. It has, however, another recommendation, namely, that it is essentially a box trap, but kills its capture outright. The trap or box should be 3ft. long,



Figs. 46 and 47.—The Dead-Fall Trap.

11 in. high, and 4 in. wide (inside), the wood used being deal, except for the treadle, for which oak is a necessity. The treadle (*a*) is 1 ft. long and $\frac{5}{8}$ in. thick. It is really a swing door upon the floor of the trap, and works upon brass pins about the thickness of a quill, which are driven into the treadle exactly at its centre. The holes in the side of the trap in which these pins work should be faced on the inside with a small brass plate having a hole through it, the brass plate to act as bearing for the pins. On to one of these a flat piece (*b*) of iron is riveted, perfectly upright and immovable. *c* (Fig. 47) should be of bell-spring about 6 in. long, and pointed at the lower end. It is screwed on to the side of the box

immediately above *b*, so that the latter overlaps the former by about $\frac{1}{8}$ in. *d* should be a piece of iron or brass, the opposite metal to the two pegs *ee*, and has a hole in it through which to attach the string holding the weight. *f* is a piece of iron having a running pulley set in it at its curved end; it is fastened on above the bell-spring and has the form of a miniature davit. The weight *g* should be about 3 in. wide and 2 ft. long. It is held up by the string fastened to a staple in its actual centre. To set this trap press down the spring *c*, and the point of it just beneath the point of *b*, then set the weight in position on the top of the trap, placing the string over the pulley, down the davit *f*, and fix the piece of metal at its end, beneath the pins *ee*. Anything running through the trap presses the treadle down on one side, the bell-spring is released, throwing out *d*; the spring being then free, the weight drops instantaneously, and crushes the animal which sets off the trap.

I have made many modifications of this, all on the same principle as far as the treadle and catch are concerned, replacing the weight by an arrangement for dropping a door at each end and so catching the animal alive; also one with a single door of similar kind. Several firms now supply traps on this principle. Fig. 48 shows an excellent form.

The true wild cat is now so rare that it is scarcely necessary to refer to it; at the same time its existence in many of the wilder and least-frequented portions of Wales, the North of England, and much more so in Scotland, is still maintained. A good number of so-called wild cats are annually reported as being trapped, some of them doubtless really wild specimens. I have, however, many reasons for doubting the authenticity of all the "wild cats" reported killed and taken, and must leave

those within whose ken the real article appears to deal with it as may seem best. For the present purpose only those cats of domestic origin which have taken to a wild life will command attention.

This description of cat is much more readily dealt with than the real wild cat, and is comparatively easily trapped. There is, however, of course, the usual amount of care and trouble necessary, for these cats will be found to be especially wary. Besides the cats which may have taken to poaching as a permanent means for

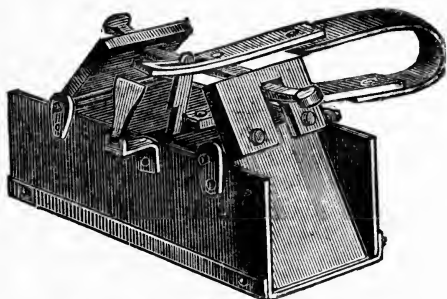


Fig. 48.—Another Form of Box-Trap.

support of life, there are many, very many, which, while apparently strongly attached to the fireside during daytime, and when their presence or otherwise, as the case may be, is liable to be noticed, have, however, an equally strong attachment to game-preserves by night, when their actions are unobserved. These extremely knowing pussies are as great a nuisance as those first mentioned, and have a peculiar habit of all coming to the same preserve, or, at least, to the near neighbourhood of it. They have been known to come several miles, and I have caught cats of this kind whose homes were situated

really at a wonderful distance from their place of capture. The injury that cats chiefly cause is amongst rabbits, &c., which are being systematically trapped, and, besides these, foxes and dogs are equally destructive. For the better determination to which animal's credit the mischief may be placed, it is necessary to mention that a cat never takes a rabbit out of a trap, but partly or nearly wholly consumes one, leaving the jagged remains in the trap. Further, a dog eats one or two entirely, and buries the remains, which it may subsequently obtain. A fox takes a rabbit from a trap, and, having partly eaten it, leaves the remains lying near; this it continues to do until its hunger is appeased; after this it carries them off.

Besides this kind of mischief, cats are quite capable of catching partridges, &c., and they are particularly fond of traversing rabbit-burrows when the burrows are sufficiently large or the cat is sufficiently small. When, however, these two provisos do not occur, cats will often entice kittens away, when these latter work much like ferrets. I have often watched these operations, and on one occasion shot two rabbits bolted by kittens.

For the capture of cats, rabbit-gins may be employed, but they require a firm and tight-holding stake, and the wider the jaws are apart the better. When it is desired to catch a cat that has become obnoxious in the circumstances above related, the rabbit found partly consumed may be employed, but must be left in exactly the position it occupied when found, and the gins be neatly tilled round it; about four or five will be amply sufficient if the rabbit be not against a wall or a bank, when, in such case, two will suffice. For the general trapping of cats the most suitable places are along the outside of plantations enclosed by hedgerows, at the corners of gateways, along

drives cut through a covert, or under the banks of roadway cuttings, in gravel or stone pits, or places of a like nature where the inside covert is close. The setting is similar to that for stoats, &c., but care must be taken to choose such a spot beneath where a bait will be placed as appears most convenient for the cat to stand upon in order to reach the lure. For this purpose any of those mentioned will do, but for preference a rabbit, and moreover a small one, fixed about 18in. above the trap. The best way is to peg it into the wall, allowing the head to hang downwards. The drags described in a former paragraph will be found not only very useful, but exceedingly efficacious in enticing cats to the trap. Tame cats have an extraordinary liking for the scent of valerian, and this liking does not desert them when they indulge in poaching propensities; it always proves a strong inducement to forget that caution necessary to their safety, and hence its employment when trapping possesses a two-fold advantage, for besides being an excellent lure it is, moreover, of great use in putting them off their guard. It is, therefore, certainly advisable to obtain some tincture of valerian and place a few drops (two or three will suffice if the tincture be good) upon each bait, besides a drop or so upon the plate of the gin when set. It is also sometimes employed without any bait to the trap, and the simple dropping of a very small quantity upon the plate or plates of one or more gins will prove a powerful attraction for cats, ending in their capture.

The advisability of the employment of the well-known box-trap is, as far as effectiveness is concerned, rather dubious for cats, as they become uncommonly wary, and except in the case of a rather inexperienced one just entered upon its vicious course of life, it is a better plan to use gins.

The form of trap known as the Hugger Trap, and shown at Fig. 49, is very useful for poaching cats and dogs. The taking of the bait releases the jaws, which seize or hug the victim round the neck and kill it.

The employment of poisons for the destruction of ground vermin in general, and for cats in particular, is a

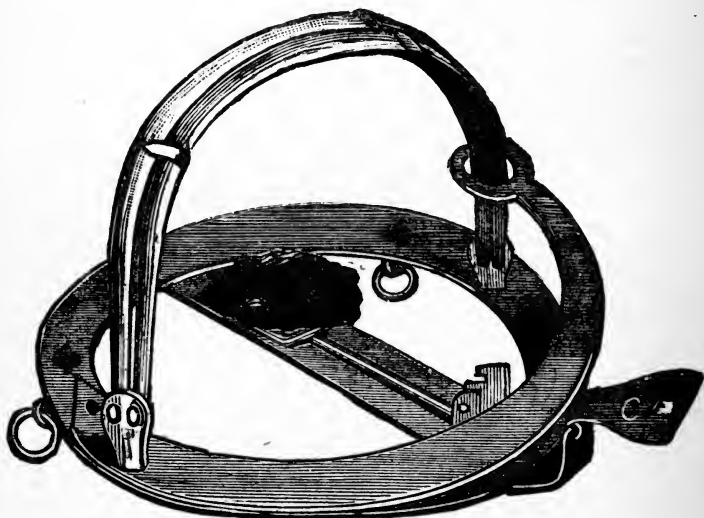


Fig. 49.—Hugger Trap for Poaching Cats and Dogs.

means to which I would never advise recourse, and is, except under certain conditions, not admissible, for the risk of poisoning animals other than those intended is certainly not worth running; besides, the expedient never succeeds so extensively as to be much preferable to the more satisfactory mode, that of using traps.

If cheapness be a consideration where quantity is a

necessity, traps for cats may be supplemented by snares, which are, however, not nearly so effectual nor so suited to varied situations. They, however, are by no means to be despised, and, when carefully made and considerably employed, are often of great service in their multiplicity.

The capture of vermin in and about pheasant and partridge pens has been purposely left over until now, in order to prevent confusion. Besides rats, of which I shall treat presently, polecats, stoats, weasels, and cats may at any time obtain entrance to what is apparently the most secure run or pen that can be obtained. Many of the misdeeds of this kind in rural districts, laid to the credit of the fox, would, I have no doubt, be more correctly set down as the work of ground vermin, rats, or cats. Especially, too, when chicks are about, where pheasants and partridges are reared, the losses sustained are sometimes even disastrous in their continual occurrence. However, steps are rarely taken in the right direction, and foxes and dogs are freely blamed for what should no doubt be seen as the work of the vermin mentioned. Both the stoat and the polecat, before trying to enter a pen or a run, make a very careful examination of the outside, looking evidently for a place by which to escape, in case their entrance be occupied at the critical time. The survey they make leaves them very liable to be trapped, and therefore, mischief having once been perpetrated, traps should immediately be set at intervals all round the pens or coops, some small trap being employed, if considered advisable. If any drain holes run through the hedgerow, a trap should be placed in them, and in the case of pens, in any spots where the probability of vermin trying to enter exists.

Obtain one or two drain-pipes just large enough to allow a small vermin-gin to work inside them, and having

laid them upon the ground, set a trap and push it inside. It is almost a dead certainty that any vermin in or around the pens will try to go through this pipe, with what result need not be pointed out.

Weasels, having a propensity for eggs, generally seek about the nests, but are by no means unlikely to kill the chicks; an egg or two placed in a nest upon the ground may serve as a bait for them.

Cats are particularly addicted to killing chicks, both of partridges and pheasants; in such case, however, the steps to be taken are obvious enough.



CHAPTER XXXVI.

GROUND VERMIN: Rats.

THERE is little doubt that of late years the worst vermin with which the generality of preservers have had to contend has been the rat. It has increased largely in numbers, and in some districts become quite a plague despite the extraordinary efforts made to deal with its ever-increasing depredations. It is unnecessary to speculate upon the probable cause of this remarkable increase. It is due entirely to the neglect of farmers, preservers, and others to adopt adequate means to deal with the pest. The means for combating the evil exist, if only they were regularly and systematically applied. Spasmodic effort is of little permanent benefit; it must be sustained to achieve material result. It is the common Brown Rat with which it is necessary alone to deal in these pages, the Black Rat having become so scarce nowadays as to be practically extinct as far as game-preserves are concerned. Individual specimens, and even two or three, crop up from time to time, but their occurrence is so rare that nothing more than passing reference to this species is required.

The common Brown Rat is too well known to require much description; but a few salient points in connection with its natural history may be brought out with advantage, as even so everyday an animal may possess traits and habits unknown to the ordinary observer; whilst being

frequently confounded with the practically harmless Water-Vole, the latter is as often made to suffer for the misdeeds of its distant relative.

It is of a greyish-brown colour on the upper and outer, and a greyish dirty white on the opposite surfaces of its body. The muzzle is elongated, but the upper jaw does not project to a very great extent, while the whiskers are soft and not very prominent. The average size of a full-grown rat is from 10 in. to 11 in. without the tail, which measures from 8 in. to $8\frac{1}{2}$ in., thus being about four-fifths the length of the body; the ears are very prominent, and in a full-grown specimen are about $\frac{3}{4}$ in. long; the tail proves, on close examination, to be a wonderfully constructed appendage. The female is slightly smaller than the male.

The rat's voracity is undeniable. Its food is of every sort and shape. Its chief means of subsistence, however, are found in grain, and in nearly all the products in which grain is employed. Meat, also, of every kind, and vegetables of many sorts, together with every conceivable substance, from old leather to green peas, form at some time or another food for the Brown Rat. It is also of a cannibalistic turn when one or more of its kind are injured or in difficulties—in a gin, for instance. Strangely enough, the male rats far outnumber the female, being numerically about seven to one, and to this fortunate circumstance we owe the fact that rats are not more abundant than they are.

Rats which inhabit the network of sewers in the metropolis and other large towns are of the same species as those which frequent the barns, houses, and corn-ricks, hedgerows, drains, and ditches and river banks, although the former are generally of larger size, altogether fiercer, and exceed what is called the "barn" rat in voracity and boldness.

If there be a particular breeding-season, it is from the beginning of spring to the commencement of winter, about three-fourths of the year. The season is, however, indefinite, for all through the winter young ones are met with in odd places, generally in a conveniently warm situation. If we may judge from tame ones, the Brown Rat must be an animal of wonderful fecundity, as it breeds six times in the year.

Rats which form their nests in and about hedgerows, on the banks at the water-side, and about fields, construct a shelter of a different kind from those whose haunts are in buildings. The former first select a secluded situation where warmth, dryness, and other conditions necessary to a rat's nest are present, and burrow, scoop out, or adapt a suitable hole, at the far end of which, where the passage is widened out, the female forms a nest, employing various substances, such as soft leaves, dry grass, ferns, moss, &c., together with any wool dropped from sheep. These are neatly manipulated into a nest of circular shape, and if not wholly covered, is so deep in its construction as nearly to close over the dam and her numerous progeny.

In town or country houses, in corn-ricks or fodder stored in barns, or in and about the miscellaneous collections which often litter up granaries and outhouses, on farms, or in the last season's clip of wool, the rats seek for pieces of rag of various colours, paper, fur, feathers, &c., wherewith to form and line their nests, which, however, are of the same shape as those frequenting banks, &c. In these the young are reared until sufficiently mature to provide for themselves, which is at about two months and a half to three months old, when most of them are themselves able to breed. The first and two or three following broods are not very numerous, ranging mostly from four to six or seven, but as soon as

the rat attains its full size, after the first winter is past, they range from eight to fifteen, rarely being fewer and often more. I have often found nests of seventeen or eighteen at a time, and many instances have occurred of twenty and upwards. Rats continue to breed for three or four years.

The female rat when rearing a family is devoted and courageous, ready at any moment to lose her life rather than see the capture or disturbance of her progeny, springing at man, dog, or ferret with a fierceness and determination only equalled by her agility. The male rat, however, has none of these qualities, and takes no interest whatever in his offspring, except as far as concerns eating them. If he discover the situation of the female's nest, he is always on the look-out for a favourable opportunity, during her enforced absence in search of food, to step in and quietly to consume his numerous family. Sometimes, however, he may doubly "put his foot in it" when seeking to intrude with bloodthirsty intent, and may meet the female. Fully aware of his design, she waits for no apologies, but flies at him with a fierceness sufficient to induce his precipitate flight. The broods of one female remain for the most part in company until the females begin to breed, after which the circle breaks up and each pursues its individual course.

Rats live in colonies, in much the same way as rabbits, but owing to the nature of their habits, not to the same extent. As soon as it is dusk and the places of their nightly mischief are quiet, they issue from the retreats where they may have remained sleeping during the day, some seeking materials for nests, others improving the strategical value of their runs, but the greater number bent on satisfying their inordinate appetite. Each colony of barn and house rats spends the time of repose in close



GROUND VERMIN

WEASEL (Winter Dress)
(*Mustela vulgaris*).

POLECAT
(*Mustela putorius*).

STOAT OR ERMINE (Winter Dress)
(*Mustela erminea*).



companionship, or sometimes snugly huddled up together in a batch, separating one from another only when their appetites move them so to do, or to attain certain things which are only within reach in the daytime. Rats are by no means selfish about any provender which they may individually obtain; on the contrary, in the event of a certain member of a family discovering a delicacy, it either fetches its friends and relatives to the spot or conveys the tempting morsel to the general meeting-place during the day. Hence rats will often put themselves to extreme trouble to transport such unwieldy articles as eggs, potatoes, carrots, beetroots, &c. Rats frequenting hedge-rows and banks, of course, cannot adopt this mode of living, and repair to the burrows they have constructed at such time as they may deem rest or sleep needful—the day not being with them synonymous with quiet and sleep, as with those inhabiting buildings.

To enumerate the various substances which may serve as food for rats is not necessary. It will suffice to point out their chief victims of a furred or feathered kind. First of these may be mentioned poultry, which at all times and at every stage suffer more or less from their voracity. Whether it be fowls' or ducks' eggs, chickens or ducklings, is immaterial. Poultry, pigeons, and pets of various sorts fall victims to these vermin.

By the pond and riverside they are no less mischievous, for, in addition to waging a war upon the inoffensive water-voles into whose homes they have intruded, they kill many a young fish and water-bird, besides honey-combing the banks with their tortuous and extended ramifications. In the hedges, too, they are depredatory, destroying all kinds of eggs, game and otherwise, besides any young partridges, pheasants, rabbits, or leverets that may fall into their clutches.

The rat is peculiarly adapted by nature to accomplish an enormous amount of mischief, and at the same time to avoid the danger likely to accrue from its boldness. For its size it is wonderfully fleet, and its fleetness is assisted by unusual agility. For descending surfaces having great slope, and even perpendicular walls, it has a peculiar modification of its hinder feet, by means of which they may be reversed from their ordinary position, and thus be capable of laying hold of any inequalities that may exist ; it can support itself until the fore-legs have again obtained a purchase. The reverse of this movement takes place when the rat ascends a perpendicular wall sufficiently uneven to admit of it. Its fleetness, too, when endeavouring to escape, and the consummate agility with which it traverses narrow ridges, and dodges from one spot to another, are great aids to it when attacked by a dog ; while the brave manner in which it defends itself to the very last moment, whether against its canine enemy when captured, or the ferret seeking its destruction within the intricacies of its ramified dwelling, is always worthy of admiration. True, there are rats to be found of cowardly disposition, but they are very few.

Before considering the means by which rats may be caught and killed, it may be well to remark upon the great advantage the vermin have in a sense of smell of exceeding acuteness, and, moreover, like nearly all other vermin, a great fear of the scent of human beings. In the war of extermination against rats I must impress upon anyone so intent the absolute necessity of employing the utmost care. As soon as instinct tells of operations of extent and determination against them, rats become extremely cautious, and, before one commences the employment of traps or possibly poisons, some means should be adopted at short intervals to clear off the

ringleaders, and thus leave the community without guides or advisers.

In dealing with rats it is necessary to bear in mind always that they are in the habit of covering great distances in search of food, and also that they repeatedly and maybe continually shift their quarters. The rats which may attack the foster-hens, the chicks in rearing-coops, and the poults on the one hand, or the clutch of the wild pheasant or partridge on the other, do not necessarily harbour near the scenes of their depredations. Oftener than not they come from a distance, and possibly from the buildings of the farms, the cottages, or the house itself situated upon the preserve. It is useless for the gamekeeper to start to kill down the skirmishing rats if he leave the main body of the army of vermin unmolested. He must strike in both directions. It is, I know, customary to separate the two jobs, but to be effective the gamekeeper must himself, or by his men, deal with both. It is for this reason that I give instructions as to dealing with the indoor as well as the outdoor vermin.

The destruction of rats in and about outbuildings, corn-ricks, &c., can be commenced by going round every evening once or twice. Each building may be visited in turn, the door being first of all quietly unfastened, and a dog let in suddenly to take his chance of any being on the ground, while the man should be provided with a stick and also a bull's-eye lantern giving a strong light, by which one can notice any rats going up the corners of the wall, or which may be lying still, as they often do when suddenly confronted with danger, when they should immediately receive a quietly-given, well-directed blow. Rushing about and indiscriminate hitting are of no avail. In granaries and barns infested with rats the vermin often

have a regular track up and down the corners of the walls, and, in order to prevent the number from escaping which are otherwise certain to do so, some small pieces of smoothly-planed board, about 1ft. wide, having the form of a quarter circle, should be cut to the shape of the corner, and fastened up, one in each, sloping downwards at an angle of about 45deg. When descending the wall, rats, if they get on the board, slide off and fall to the ground, in all probability without any injury to themselves. If these pieces of board can be easily supplemented by pieces of glass of smaller size, all the better, but any nails used to support them must, if situate toward the outer portion, be placed beneath the glass. In some instances these embellishments of the corners of outbuildings will be found excellent for preventing rats from getting away.

If it be intended to employ traps as well, there should be plenty of them placed about, unset if gins; or tied up, if box-traps or those working on similar principles.

Ferretting rats out from buildings and killing them with dogs, &c., unless properly carried out, is a very uncertain mode of dealing with the pests, as it often has the effect of bustling the vermin about and scaring them; on the other hand, if the work be thoroughly done, then it rarely fails to leave its mark. In order, then, to make the business productive of beneficial results, a systematic raid must be arranged and carried out. Of course, the chief thing is to have a good lot of ferrets well up to their work, and at the same time large and strong enough to show to good account in the many fights which they will have to engage in. The number of ferrets would be regulated by the extent of ground they will have to spread over, and it is best to obtain about twice as many as one wants to keep going at a time. Some terriers must also be on hand—good dogs, really steady on their work, and not

unduly excitable, for nothing is worse and more injurious to any chance of effecting good results than a cur running hither and thither, without doing more than yelp and distract the other dogs' attention. If any outlying exits of drains in any way connected with the parts being ferreted exist, they should be provided with wire-cage traps, such as are sometimes used as eel-traps; these, when properly fixed, under the conditions named, often catch a good many. They must be looked at continually, otherwise a ferret might get in, and if among five or six rats would have rather a rough time of it. In order to make this wholesale ferreting about the buildings a success, an entire day should be devoted to it, commencing early in the morning, and as it will probably take place in autumn or winter, it is necessary to take up the ferrets at from two to three o'clock. Corn-ricks, when rats unluckily have taken up their abode therein and are devastating them, should be immediately cleared out by ferrets, and every possible means of access to rats stopped. If ricks be built simply on the ground, then constant trapping and ferreting are the only means of alleviating or altogether stopping the mischief.

When it is desirable to extirpate rats which have adopted a hedgerow for their abode, they may, if the holes of entrance and egress be discovered, be trapped by using a small-sized gin at each hole. The setting of the traps must, of course, be carefully effected in accordance with instructions which will be given presently. On the other hand, ferreting can in such cases be resorted to with beneficial results, two or three good dogs and active ferrets being necessary.

Before proceeding to discuss the relative qualities of the various traps which can be employed to advantage, further attention must be called to the great powers of scent

possessed by the rat, and, moreover, the ease with which it takes alarm at anything in the least strange or unobserved by it before, but above all, the fear it betrays of anything giving evidence of having been lately handled by human beings. It is thus evident that not only is it necessary to avoid leaving scent by handling traps, or from their lying adjacent to anything unknown to the vermin; but the scent of the hands, when setting the traps, should be disguised as far as possible by repeatedly rubbing them in fresh, dry earth or sand. Oatmeal may also be employed for this purpose, being very effective in removing human scent.

The trap most generally to be adopted is naturally the Dorset vermin trap, or else the American pattern musk-rat trap figured previously, as these two are applicable in nearly all circumstances. The size need not be so much an important consideration as the fact of its working well, this comprising ease in "springing" and a firm but not sharp snap. The best size for the former is $2\frac{1}{2}$ in., and of the latter 3 in. Light steel chains and iron stakes must be used with them.

Before commencing operations the gins should be dipped for, say, ten seconds in boiling water, not longer, a stick being employed to lift them out. This operation removes any scent of oil or handling left upon them, and they will, moreover, dry of their own accord in a few seconds. Then, when all have been thus treated, remove scent from the hands by means of some oatmeal or dry earth, in order that a free use of one's fingers can be made without spoiling the chances of success. The several parts of each gin requiring it should now be lightly gone over with a mixture of neatsfoot and aniseed oils, and the traps be every one fastened open by binding wire over the spring close to the jaws. One can then go round

the buildings which it is intended to work in, and place the traps where the rats mostly commit their depredations.

In about two or three days the vermin will have become sufficiently acquainted with the traps introduced in every direction, and one will be able to notice that they run indiscriminately over the now harmless gins, which can forthwith be set to catch them. I do not advise the employment of baits when using gins, except under certain conditions, but rather the traps should be set in any runs or places where the vermin make their paths from one part of the building to another. If there be any place where a stray wisp of straw or hay has remained, a trap may be set under it, the straw being put as little as possible inside the jaws, and, if using any in covering these, at right angles to the spring, so that when the trap is sprung the straw is raised upon the rising jaws, and does not get between them. The same remarks hold good in the case of hay. The most likely places are upon the tops of walls, in hay-lofts, on the rafters of granaries and all about the corn, behind any barrels standing near the granary walls, and in all such similar spots. One proviso, however, is, not to place them where fingers of other persons, fowls' legs, or what not, are likely to intrude; and if one conceal the gin either under corn, hay, or in other places, let people be warned of the fact.

The trapping of rats along hedgerows and banks is similar to catching rabbits, only on a smaller scale; the runs must be determined upon, and the traps tilled adjacent to the holes, staked and covered in the orthodox manner, but in numbers sufficient to provide every hole with a wile at its entrance. Rats established in corn-ricks are not easily trapped, but only those ricks not mounted on staddles need suffer, as the removal of any possible means by which the rats can regain the rick, once having left it—

and they must do so to obtain water—immediately stops them; those stacks, however, built on the ground will suffer if rats are not ferreted out or otherwise destroyed at sufficiently frequent intervals.

In dwelling-houses and the like the gin may be employed, if it be covered with chaff amongst which corn has been mixed, and whereon the vermin have regaled after their wariness has been subdued. One disadvantage which the gin has is that its working frightens the uncaught rats, and continual trapping of comrades drives the others away, so that often two or three systematic catchings are

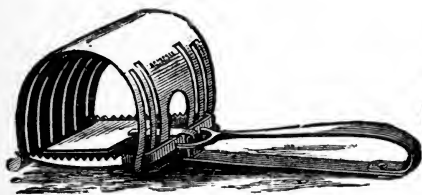


Fig. 50.—Everitt's Patent Trap—Set.

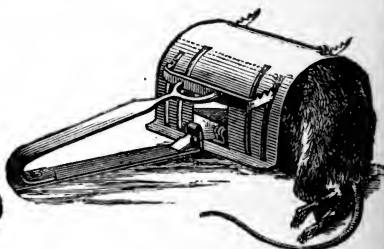


Fig. 51.—Everitt's Patent Trap—A Captive.

necessary before the ever-encroaching vermin are cleared out.

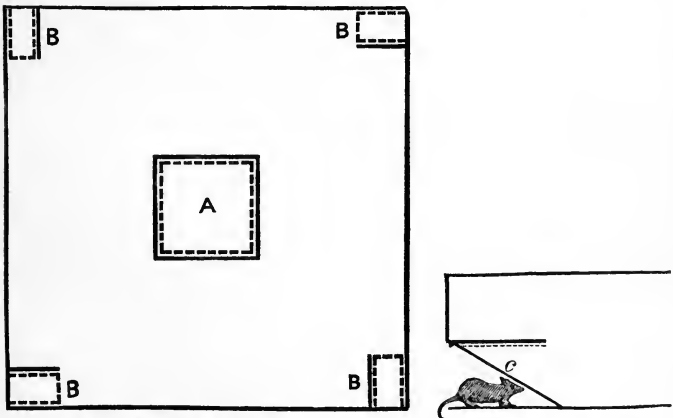
In addition to the ordinary Dorset trap many others may be employed for taking rats. Of these, Everitt's trap is the most useful, and adaptable for most purposes. Alfred Clifford's patent trap is also very effective and useful, and is, without exception, the best form of box- or cage-trap there is upon the market. The former is shown at Figs. 50 and 51. Clifford's traps (Fig. 52) are somewhat expensive, but with care they last for a long time, and are applicable in a variety of ways upon the preserve. They are obtainable in several sizes.

A form of trap I have used with considerable success is a double cage-trap. It consists of a cage of galvanised iron wire, about 2ft. square and 5in. deep; in the centre



Fig. 52.—Clifford's Cage-Trap.

of this is a second compartment, about 9in. square, entirely shut off from the rest, and it opens only to the outside. To fit exactly into this is another complete cage, with a small door, and provided with a small handle to



Figs. 53 and 54.—Plan and Mode of Entry to Cage-Trap.

lift it out; at each corner of the large cage is a little flap door of wire, working in a passage formed by fixing a small wall of wirework adjacent. The annexed sketch shows the affair more clearly. Fig. 53 represents the

plan of the trap, A being the inner compartment with the dotted line showing the cage which is dropped into it; B, B, B, B, are the entrances, working as in Fig. 54. The rats wishing to enter, attracted by a tame brown one, which is in the cage at A, and well provided with food, work round and round till they come to the openings at B, and pushing in, as shown in Fig. 54, get into the body of the trap, when the flap *c* falls down again, thus preventing their getting out.

At Fig. 55 is an illustration of another kind of rat-

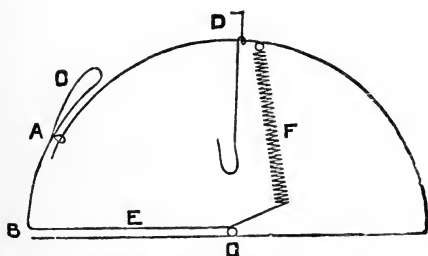


Fig. 55.—Frost's Rat-Trap (Section).

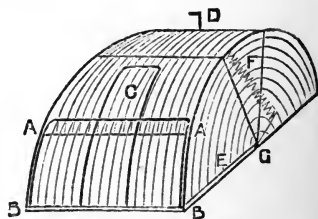


Fig. 56.—Frost's Rat-Trap (Front View, Shut).

trap, which I consider an improvement on the old form of cage-trap, and if a treadle bridge were substituted for the bait on the hook it would be still better. It is made of galvanised wire, the bottom being oblong, about 15in. to 18in. long by 6in. wide; the top and ends form a semi-circle, and the sides are flat. A B (Fig. 55) is the door which slides over the top, leaving the front open, and is held in the ordinary manner with the wire loop, C, by the hook, D. At each bottom corner of the door is a lever, E, twisted round a wire at G, and attached to a coiled spring, F. Immediately the bait is touched the door is released, and the springs, acting on the levers, close the

exit. Fig. 56, where the same lettering is followed, shows a front view of the trap when shut.

The "Break-Back" rat-trap is an excellent trap for rats; when properly used it is very efficacious in catching those that have purloined game-chicks or the like, by baiting with a piece of meat, &c. Its adoption, too, in barns and similar houses as a trap which may always be kept set, owing to its conspicuousness, can also be advised, and as a general addition to the usual stock of gins it is by no means to be disparaged.

Whilst the employment of poison in whatever form for destroying vermin in general, and rats in particular, has little or nothing to recommend it, no objection can be taken to the use of the Virus recently brought out for destroying rats and mice. This is a bacterial growth upon gelatine, which contains the germs of a disease rapidly fatal amongst rats and mice. Fed to them in prepared form upon bread or corn, the vermin consume the bait, and become infected with the germs of the disease, which in from eight to fourteen days proves fatal. Rats infected with it communicate the disease to others of their kind, which also die. It is, however, perfectly harmless to human beings and all other creatures except rats and mice. For this reason there is no objection to its employment.

The Virus I have used, and with unvarying success, is that known as the Liverpool Rat Virus, prepared by Messrs. Evans, Lescher, and Webb, Limited, of Hanover Street, Liverpool. Both in and around dwelling-houses and outbuildings, stacks, and everywhere rats congregate, I have found that with two, or at the most three, dressings, they have entirely disappeared. I have also used it in covert and hedgerow with a like result, and am sure that no more effective and wholesale manner of ridding a place of rats is available at the present time.

CHAPTER XXXVII.

GROUND VERMIN: The Hedgehog.

THE hedgehog is decidedly vermin, though not generally so considered except by gamekeepers. It is mostly regarded as living entirely on insects and such reptiles as it can discover in these islands, but it really is as destructive amongst eggs and young game as it can well be, considering its comparatively slow movements and the difficulty such a rough-bodied, short-legged animal must have in passing over uneven and overgrown ground.

There is no need to describe the appearance of the hedgehog, which is fairly plentiful all over the country. It is essentially nocturnal in its habits, and in its natural state invariably retires from the search for food and other occupations as the sun rises, nor does it again come forth from its hiding as well as sleeping place until the dusk of evening is deepening into night, when it goes in search of prey, which is generally said to consist almost entirely of insects. Still, whatever constitutes the ordinary food of the hedgehog, the fact remains that it is addicted to the capture and eating of many of the furred and feathered *protégés* of the gamekeeper.

There is no sort of young game which the hedgehog cannot catch, and, having caught, consume, and, moreover, with no inconsiderable avidity. Whether it be young rabbits or leverets, pheasant or partridge chicks, or young

grouse, it is all one ; whilst as a destroyer of game nests it is an equally objectionable creature in field, hedgerow, and covert. Whatever its virtues may be outside the lands of the preserver, it is singularly destructive within them, and should be captured or destroyed with no uncertain hand.

I have remarked that hedgehogs increase suddenly or almost disappear in or from certain lands with rather curious inconsistency. Sometimes, when one is fairly sure they have been cleared out from a preserve they reappear in considerable numbers, and then again, when many are about, the numbers caught or destroyed are in no way sufficient to account for their total disappearance.

The nest of the hedgehog is generally placed in some warm nook at the root of a tree, or in a fissure of a decayed tree itself, care always being observed that the entrance is large and easy of access, so that in the event of a hurried retreat it may quickly enter, coil itself into a ball, and seek defence against man or dog. Often the retreat is chosen among rocks or large stones, and a warm, dry, sheltered crevice provides the home of this eminently interesting animal, while again it may adopt a rabbit burrow for its nest, whence the rightful owners, no doubt, beat a hasty retreat.

The greater number of hedgehogs hibernate during the inclemency of the winter months, though not all, as occasionally these animals have been observed passing the winter in the same manner as the summer, except always that their comfort cannot be so great, nor their food so plentiful. However, those—and they are by far the greater number—which pass into the peculiar state of hibernation do not provide any food for themselves, and are consequently of great interest for this reason.

As soon as the winter is over, and they again take up their usual routine of life, they make preparations for

breeding, and about May the litter is produced. The young of the hedgehog are, without doubt, the queerest little animals one could name, and, curiously enough, the ears as well as the eyes of the brood are closed until from fourteen to twenty days old. When about three months old they are completely covered in their prickly armour, but not until six months do they become full-grown. The young number from three to five.

In addition to the usual nest, the female constructs another wherein to bring forth and rear the young, and this is a model of comfort and neatness, composed of moss, lichen, and similar materials, and so thatched with leaves, &c., as to be impervious to the sharp showers of rain frequent in springtime.

The habits of the hedgehog are such as render it difficult of capture except *after* evidence of its depredations have become apparent, although once it be evident that the vermin in question are in any numbers about the preserve it is comparatively easy to take them fairly freely. The ordinary spring traps for vermin are the most effective, although they are quite as liable to be caught in any of the others which I have referred to from time to time. The usual bait for hedgehogs is found in the remains of any bird or other animal it may have killed, or of the eggs in or about any nest it may have raided. It is more likely that evidence of hedgehogs' presence will be chiefly provided by their excreta, which are very characteristic, and once you get amongst them almost any lure will attract them. Probably the best bait for hedgehogs, however, is the dead body of one of their own kind, which, if suspended from 1ft. to 3ft. above the ground, is sure to attract any passing hedgehog into the trap or traps placed immediately beneath it. The same applies in a less degree to the bodies of other vermin, ground or winged—but whether it be the

actual carcase itself or the maggots which may possibly drop from it which is the attraction I am unable to say.

If it be desired to take hedgehogs alive, a proceeding sometimes not unprofitable in the neighbourhood of large towns, where there is a demand for them as pets or for household purposes, one or more pitfall traps may be made and employed. The hedgehog is peculiarly fond of working round and round certain fields adjoining woods

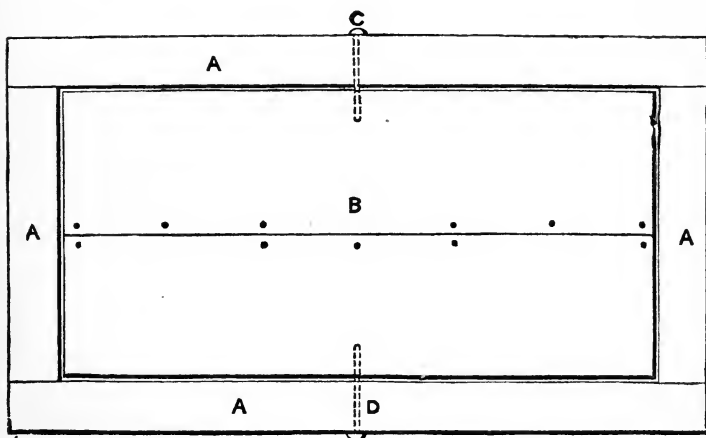


Fig. 57.—Cover of Pitfall Trap for Hedgehogs, etc.

or plantations, and there are sure to be also one or two of these fields more frequented by hedgehogs than others. Fig. 57 shows the construction of the pitfall, and as it is easily made and used, its employment is useful for catching a variety of vermin, for it can be placed in the covert or field, and left to take its chance. The measurements given are suitable alike for hedgehogs, stoats, weasels, and similar small animals, but for cats it must be made larger. A marks the four sides forming the frame,

2in. thick, 3in. wide, and $3\frac{1}{2}$ ft. by 2ft. B is the cover, made of two pieces of 1in. deal, strengthened by cross-pieces on the under side, and measuring 3ft. by $1\frac{1}{2}$ ft. C and D are two pegs upon which the cover easily works up or down, as in Fig. 58, the dotted line showing the proper position when the cover is at rest. To use this a hole must be formed in the turf sufficiently deep to contain the frame, after which a square hole slightly larger than B, at the sides, must be dug, about 2ft. to 3ft. deep.

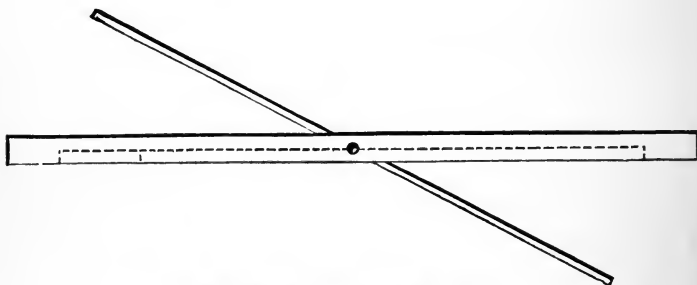


Fig. 58.—Section of Pitfall Trap.

The situation for this should be chosen in a nice open suitable place, which hedgehogs are known to frequent, and, being almost certain to find out this wooden cover, they attempt to run over and sniff about it, and, consequently, get caught. I have before mentioned the pitfall in this work, and would advise its employment where there is a chance of good results.

The above measurements may be correspondingly increased to fit it for rabbits, or reduced for smaller and lighter vermin.

CHAPTER XXXVIII.

WINGED VERMIN: Ravens.—Crows.—Jackdaws.—Magpies and Jays.—Hawks and Owls.

Ravens.

NOTWITHSTANDING the long list of what is generally termed "ground vermin," there is a second quite as lengthy, comprehending the various birds which, in contradistinction, we call "winged vermin." The first of these to be noticed is the raven, a well-known bird on rough moorlands, becoming more numerous as the country becomes wilder and less frequented, though the presence of sheep and cattle is to its liking. Accordingly, the bird is growing scarcer every year, as the continued increase of cultivation makes inroads on its natural domain. On the higher portions of all our moorlands, in the mountains of Wales and Ireland, and throughout the greater portion of the Highlands of Scotland, where the weather mostly inclines towards roughness, and is oftentimes wild in the extreme, the raven still finds localities suitable to its taste, and spots where it can with comfort eke out the days of its varied existence, a menace to all birds smaller than itself, and ready to defy the supremacy even of the eagle, should one venture to intrude upon its fastnesses. The raven is decidedly a large bird, measuring about 2ft. in total length, by some 4in. to 4½in., while the

width across the wings, when full grown, is about 3ft. Its flight is remarkably elegant for a bird so ungainly on the ground, and is, moreover, exceedingly powerful, alternating between rapid directness and a short hovering motion, either produced seemingly without the slightest exertion.

Ravens live for the most part in pairs, the same two mating off in successive years, and remaining in company at all times, except, of course, during the nesting-season, when a close companionship is impossible; but as soon as the young are large enough to fly, the two old ones join them until the progeny throw off the parental yoke, when they again return to the enjoyment of their former solitary life. The nest, or eyrie, is usually formed in the interstices of some rocky crag, offering sufficient space, together with security from human beings, or placed upon the topmost branches of some high tree, beyond the reach of harm. It is invariably large, as, besides being from 2ft. to 3ft. wide, it is added to year after year until sometimes quite a monstrosity is the result; sticks, lined with fibre, roots, hair, and wool form the materials. The young ravens are the object of considerable solicitude on the part of their parents, who are ever bent on providing them with a sufficiency of food; and, besides being voracious, the nestlings often endeavour to fly before they have their feathers. Falling from the nest, and, being unable to return, many a young raven has to take its chance on the ground till its feathers grow, often being captured, and sometimes losing its life.

The food of the raven is, for the greater part, of an animal nature, and its voracity is seldom equalled among birds, for, in addition to every living thing which comes in its way, it will include fruit, corn, &c., in its varied dietary. Nor does it fear to attack animals larger than

itself, and there is nothing which can be overcome by its strength or wariness that is not liable to fall a victim to the raven's voracity. Lambs and the feebler sheep suffer chiefly from attack, while game of all sorts which may be in the neighbourhood are as fish to the raven's net, the eggs of grouse and the birds themselves being the chief objects of the raven's rapacity.

There are but few opportunities offered for its capture by traps, and it is necessary to depend for the most part upon taking the young or eggs, or shooting the birds. Upon the first mode but little need be said, but upon shooting a few remarks may be helpful. The best time to get at ravens is in summer, when the birds may generally at mid-day be seen hovering round the highest part of the moorland which they frequent, and a position should be chosen in some spot hidden to a great extent, whence aim may be taken with but little exposure. A dead lamb or a piece of sheepskin should be provided and placed in full view (on the top of a large stone for preference) in close proximity to the person concealed. If the ravens be about they will soon notice the lure and commence circling round about it, uttering their dismal croak meanwhile. Under such circumstances, a shot at one or both is almost certain. In the open they may often be brought within range by simply lying down on one's back.

This, so far as I am aware, is all that can be said as to the capture of these birds. It was necessary to take some note of the raven as vermin, for undoubtedly in many districts it is a source of great annoyance and loss to the game-preserve, and whatever may be said as regards the increasing scarcity of the bird, it is certain that for many years to come it will find abundance of country in Great Britain suitable to its tastes and habits, and where its presence may be freely tolerated.

Crows.

In outward appearance the often termed Carrion Crow is neither more nor less than a miniature raven, while there is also so little by which to distinguish it from the rook that the two are often confounded, the only actual difference besides "look" being the bleached beak and the bare skin upon the rook's face. The latter, however, is decidedly gregarious, while the crow prefers to remain in small parties of a single pair to five or six. The crow, too, is comparatively strong in numbers, and must be well able to take care of itself, seeing the persecution it receives from both the gamekeeper and the farmer. With some little observation it will be noticed that, although it has a *penchant* for semi-solitary existence, it is much inclined to assemble with others in the morning and at evening, and further, that these birds have a certain daily routine, more or less closely followed; particularly is this noticeable in their choice of resting-place and manner of going to roost. The former is generally chosen after some seeming deliberation, and when one or two have found the situation safe, the rest drop in gently, one, two, or three at a time.

About the month of March the young crows commence to pair off, and as soon as mated the construction of the nest is begun, and is slowly brought to completion by the united efforts of both birds. Though large, it is by no means compact, and is invariably placed at—not on—the fork (not always the main one) of a large tree. Sometimes it is on the topmost boughs of a high swinging Scotch fir; at others, as near the extremity of the middle branch of an overhanging oak as comfort and safety will allow.

The food of the crow is of such varied nature, and extends to objects so vastly different, according to locality, that very erroneous opinions are sometimes formed as to

the amount of destruction it will commit among game of all kinds. The nests of small birds, placed in any position liable to observation, are quite likely to be emptied of their contents by these feathered vermin. Rabbits of any size or age are captured, and, being captured, eaten, the favourite ruse seeming to be a quick rise from one side of a hedge, swooping down on the quarry already marked on the other—at least, I have repeatedly observed it so—in addition to many other stealthy ways worthier of a poaching cat. There is no doubt that in a similar manner to this crows kill young partridges, besides fair-sized leverets, but this it is difficult to prove, for, in addition to having a habit of hiding to some extent the remains of its victims, the action of a crow when consuming a bird is so indistinguishable from its usual mode of behaviour that it would excite no special notice. It is, however, among the young of game that the crow's mischievous habits prove most objectionable, and although the magpie and jay are remarkably obnoxious, the crow runs them very close as a destroyer of eggs. If one of these marauders discover a nest, whether being in actual search of food or in hurried flight, it will drop down to mark its prey, and return speedily at the first available opportunity.

Young birds oftenest fall victims to the crow's rapacity when sufficiently old to leave their parents temporarily during the daytime, only going back to their protection at intervals and at night. Under such circumstances crows pick up a good number of young partridges and pheasants, and, perhaps, even more than the magpie or jay, for if this bird has a preference it is for young game of the age indicated. Game-chicks and wild ducklings when first allowed to roam about the rearing-field, are very liable to be captured, killed, and carried off by the Carrion Crow; indeed, in some districts extreme

vigilance is necessary, while even in localities where the bird is not plentiful and comparatively harmless, there are sure to be one or two wary old crows about, which invariably turn up at odd moments, and, in spite of close vigilance, will manage to snap up one or more by repeated visits at odd intervals.

Wherever many young pheasants are reared and allowed out of the runs when small, these sombre thieves will be on the alert, and many, indeed, are the raids they annually commit in this direction. In addition to thus inflicting loss, the crow is a remarkably persevering thief in respect of the eggs deposited in outlying corners, &c., by perverse-natured hens which will lay astray, and it is not uncommon for some wily old Carrion Crow systematically to visit such a nest and daily to purloin the freshly-laid eggs. These depredations in and around the buildings are, for the most part, carried on either in the early morning, or at least before the middle of the day has arrived, with its consequent bustling about, and, although the crow is disposed to snap up any duckling or chicken which may be roaming the fields at some slight distance from the house, its favourite way is to hang about in the morning, and according to circumstances betake itself subsequently to some more distant parts of the place, where it may conveniently have a good time amongst the young and eggs of the game, or disport itself on young rabbits or leverets. I mention these habits of the crow in respect to young poultry more particularly, as, although its chief mischief is amongst the game, it renders itself as easily taken by traps, &c., in the former case as in the latter. As the season for the above-named food draws to a close, the crow is obliged to make shift in other directions than in the preserves and poultry-yard, and although it prefers at all times food of the nature just described, when the carcass of

any dead animal is to be found, the crow is able to some extent to verify its cognomen of "Carrion Crow." But putrid flesh is by no means so much to its liking as to warrant the appellation given to it.

The Hooded Crow, another of the *Corvidæ*, though not a common visitant in our Southern counties, is well enough known in the Northern ones and in the sister countries. I do not think it breeds freely in England, but on the wild sea-coast of North Scotland and the adjacent isles it multiplies greatly. As far as its other habits go, it is similar to the Carrion Crow, except that its taste for birds and other animals, especially those of a "game" nature, is greater, and consequently more obnoxious to sportsmen. It is known by a great variety of names, the commonest being Royston, Grey, Grey-backed, and Kentish Crow.

Rooks.

As previously stated, the rook and the crow are frequently confused, though oftener perhaps than is the case with any other of the feathered denizens of these isles; and naturally, for to the unaccustomed eye there is literally no difference in colour, size, or habit, between the two, while in most counties the names are employed to both indiscriminately. To the practised eye, however, the "look"—I know no more expressive word—of the two birds is different, while on close scrutiny the divergence is marked.

The rook, as already suggested, is essentially gregarious, and prefers to pass its time with as many more of its species as may be compatible with harmony. It lacks a good deal of the daring noticeable in the crow and other congeners, but is very slightly wanting in cunning and wariness. Its nesting habits are too well known to need description. The rook is of a particularly active nature, and is both an early riser and late in going to roost.

It would serve no useful purpose to discuss the never-ending question of the rook and its food; its value to the agriculturist, or its effect upon the interests of the game-preserved. I am quite content to dispose of the first matter with the remark that it is possible to have too many rooks, and the latter with the statement that it is impossible to have too few. If there be any preservers desirous or willing to exclude the rook from their list of vermin, by all means should they be allowed to do so. Personally, I prefer to count it in with the others, and deal with it accordingly.

No one should say that the rook never touches game. On the contrary, the rook has a decided taste for young rabbits and game-birds—not quite so pronounced perhaps as the crow, but sufficient to keep it active in search of such young birds and ground-game as may be obtainable. Far from being rare, it is a very common occurrence for young furred and feathered game to fall victims to the rapacity of the frugivorous crow. I have so full a knowledge of this that I simply cannot accept statements, made by those who pretend to know, concerning the utter harmlessness of the rook in respect to game.

The rook is very destructive during nesting-time to partridges and pheasants, and its name must be added to the list of birds and other animals at all times eager, when the chance offers, to despoil their nests and feast upon the eggs. Not that the rook is, as a rule, a determined searcher after them, although this exceptional conduct sometimes occurs; but it takes them when, whilst in search of other food, it discovers a nest. The one accidental crime leads to another until the habit becomes ingrained in the bird, and spreads from one member of the family to another. The same thing occurs as regards chicks, young birds, rabbits, and leverets, until at the finish you find

individual rooks as bad as Carrion Crows, with a decided tendency upon their part to adhere to this new mode of living, and to instil the bad habits into their companions.

The rook upon the game-preserve must receive precisely the same treatment as the crow, the magpie, or the jay, if you would keep on the safe side.

Jackdaws.

It would not do to omit all mention of the jackdaw from these pages, because, in common with crows and rooks, it sometimes proves very mischievous amongst game-eggs and game-chicks. It is, however, so generally customary to encourage a colony of jackdaws wherever they appear that it is exceptional for the gamekeeper to have to treat them as vermin. However, where they do exercise their malpractices, it is necessary to employ similar means to prevent them as are effective for other vermin of the crow tribe.

Magpies and Jays.

Both the magpie and the jay are so well known by reason of their somewhat pronounced form and colouring that little description of them is necessary. Both of them cunning to a degree, persistently inquisitive and unceasingly destructive as far as concerns game in almost every form, they combine between them an imposing array of those characteristics most typical of winged vermin. It is not unusual closely to associate the two birds in respect to the depredations they commit, but the intelligent observer will easily learn to discriminate alike between the time and place of their malpractices, and their respective manner of committing them. For all that, they are frequently confounded.

Inasmuch as a large amount of the warfare which the

gamekeeper must wage against these birds is most successfully carried out during the nesting- and rearing-time of these vermin, knowledge of their respective nests, nesting-places, and haunts and habits at such times is very necessary.

The nest of the magpie, although of rugged exterior, is by no means roughly constructed. The site usually chosen is where several branches form a fork with the trunk, and although the height from the ground is variable, the birds always choose a tree which, at about four-fifths of its height, offers a suitable place ; hence often nests will be found far up amongst the branches of tall fir-trees, where foliage is dense and spreading, mostly in situations somewhat conspicuous, or in comparative proximity to buildings ; while, under opposite circumstances, where the covert is remote and closely wooded, one may discover a nest some 10ft. or less from the ground, and seemingly open to all publicity. In every instance, however, it is carefully constructed of small sticks, the majority of which are frequently prickly ones, and lined with fibre and roots, having usually an entire dome of the first-mentioned materials, or something like it. Oftener than not the dome is complete, and a small round entrance at one side the only opening to the nest.

The nest of the jay is somewhat cup-shaped, the materials being sticks, grass, and fibrous roots ; the former is used as the foundation upon which the latter are laid to form a fairly compact nest. The situation is sometimes at considerable height, and, for a man, often placed at an inaccessible point, so that it will be found most advisable to shoot the old ones when opportunity offers. Occasionally, however, the bird nests in a fairly low bush or tree.

It would be an almost unending task to attempt to enumerate and describe in detail all the places, and under

what conditions, magpies and jays may interfere with the purpose of the game-preserve. The former bird is less gregarious than the latter in its habits, and works, as a rule, singly, or in twos and threes, whilst jays will frequently consort in considerable numbers for their joint purpose. As regards the destruction magpies commit, a great deal depends upon whether they be numerous in the neighbourhood or not. The more numerous they are the less difficult are they to catch, and the less, comparatively speaking, damage do they do. Of course, more magpies do more damage than few, but it usually proves the case that individual pairs or broods, working in different parts of a preserve, will account for more eggs and young birds and ground-game than many more spread over the same area. They are much more difficult to get at for shot, or to trap. Comparatively they do more damage within the coverts and in the fields and pastures adjoining than do jays, whose preference is decided for work along the hedges and hedgerows in spinneys, small clumps of trees, and along those fringing and dividing the open ground. The dietary of the jay is more akin to that of the rook than is the food-list of the magpie, whose tastes are akin to those of the crow. This constitutes the main difference between the two birds regarded as vermin, and marks the magpie under ordinary circumstances as distinctly more destructive to the charges of the game-preserve than is the jay.

Before passing to the best mode of taking these vermin, when it will be necessary for me to point out where their depredations chiefly occur, a word or two as to the discovery of their nests and destruction by shooting of the old birds and also of the young may be useful. Both magpies and jays may be said to be natural sentinels of the woods and fields. Their note of warning to one

another, and to other denizens of the coverts, &c., is frequently the first notice one receives of their presence. It at the same time signals their departure as a rule, so that you require to *see* the vermin before you *hear* them. At nesting-time the parent bird clings closely to the nest, and the magpie always, and the jay mostly, has a well-protected line of flight. The point then is firstly to discover the nests, and then subsequently to seek the chance to shoot the owners. When following the flight of either as they work through and perch on the trees or shrub growth of the hedgerows, always remember that directly they enter the foliage or boughs they strike upwards, and that it is necessary to look for them above the point at which they may have disappeared. Again, jays which go over a hedgerow always take about 50yds. flight up or down the other side as soon as it conceals them, and then get amongst the boughs again out of gunshot. Directly a magpie or a jay disappears in this fashion, run to where you think it will be; this plan offers the only chance of a shot as a rule.

Both magpies and jays are uncertain birds to take, and were it not for the innate curiosity and inquisitiveness of the former, it would be still more difficult to capture. Once, however, one secures the measure of these birds and their peculiarities of working, it becomes less difficult to take them. The secret of success, however, in this direction is to know not so much what they have done as what they will be doing next. They certainly are two of the wariest winged vermin the gamekeeper has to deal with, and unless he be up to all their moves they are sure to have the best of the bargain.

The small Dorset vermin-traps, 3in., with brass catches and fine treadles, are probably the most usual traps to be employed, and can be made very serviceable, but wherever

possible I would replace them by one or other of the three traps which are illustrated at p. 318, Figs. 34, 35, 36. These are all of light steel construction, and require little description beyond what the illustrations tell. They are easily set, require little covering, and do not require so much attention as those of the Dorset pattern. They may be put down as thickly as may be desired, and for hedgerow and similar work may be employed in many more suitable sites than the ordinary gins. It is advisable to have traps of this pattern of the larger sizes, although the smaller ones work well enough under most circumstances. Still, I like to take winged vermin well up the leg, and it requires at least a $3\frac{1}{2}$ in. or 4in. trap to do this.

Generally speaking, wherever you see magpies and jays working or frequenting, there you have the places in or about which to trap for them. Whether they have committed any actual damage or not is a small matter; it is certain that they are intent upon it, or will be at their destructive work sooner or later. In any case, the nature of the baits to employ for them may very well be determined by the probabilities of what it may be they are after. As a rule, magpies, if disturbed, will return to the prey they have secured or attacked, but jays are less likely to ignore the disturbance and come back to the scene of any particular depredations. Probably the most attractive baits are either a whole young rabbit or pieces of larger ones, notably the inner portions, liver, &c. Eggs are extremely attractive to both birds; the broken shells will prove sufficient.

Various birds, especially game-birds, are capital baits for magpies. It is not necessary that any be killed for the purpose. Such may be employed as are found lying dead about the covert or field. Where pheasants are reared in any quantities some weaklings will always die

off, and these may be advantageously employed as a lure. Young chickens and ducklings too weak to sustain existence may be employed in association with a set gin or two, and pullets which chance to die are also very good bait.

Mice of all kinds, young and not too large rats, a mole or a hedgehog, are often very successful, especially the first-named, and I have frequently found a few gins with mice tied on the plates singularly attractive when gingerly set and covered in pastures where magpies are wont to congregate. Another and rather unwieldy bait under the circumstances is a sheep's head, or even a portion of a sheepskin, or a young dead lamb. In either case, if exposed in a field, magpies passing are sure to pay any one of them a visit.

In any case the baits should be pegged down where their nature permits of it being done, and it is always better to put down two or three traps to each bait, or so to dispose the bait and the surroundings as to admit of but one approach. I am not, however, at all in favour of the formation of elaborate stockades in miniature leading up to the bait, and through which the vermin are supposed to pass. It requires more time, more skill, and more knowledge than the average keeper possesses to do this sort of thing successfully. Generally speaking, the more simple the manner in which the traps are set, and the more careful the mode of covering them, the more successful they prove. As regards the most likely places for placing traps, it is only possible to point out a few which may serve as a guide to the choice of others.

When baits are employed, the best places to take magpies are certainly in fields and open parts adjacent to, or in the near neighbourhood of, coverts and plantations. I think this bird rather prefers to pick up its food in the

open, although sufficiently near shelter to retire quickly to it in case of need.

As mentioned before, jays have a habit of working their way up hedgerows, covered on the top with a fair amount of growth, more especially when they are plentifully threaded with rabbit-runs, the chance of securing a young rabbit being one of the chief inducements. Choosing any well-frequented hedgerows, and favourable situations having been decided upon, say two or three every 60yds., a young rabbit should be pegged down at each, and two neatly-covered traps set one on each side of the bait. If the jays be in the habit of frequenting the hedge, some are sure to be captured, and if opportunities recur repeat the process till the vermin clear, or are cleared off.

Jays in the open are not easily trapped. They are remarkably uncertain in their habits, passing from one haunt to another in quite erratic manner at times. In young plantations—the smaller the trees the better, where the ground is divided out by paths or drives—jays are particularly disposed to forage. They will get on the small trees and hop in and about them, run under them, and work and search about on the paths and drives at irregular and alternate intervals. Here, again, the coney becomes useful as a bait, whilst in their season eggs serve an excellent purpose, and a neatly-placed and formed nest of four or five shells, put for preference at one side of a little open patch amongst the trees, should not fail to entice the jays into the gins placed in front of the artificially-formed nest.

When one is trapping or snaring rabbits, especially adjacent to covert, the operation will frequently be closely watched by any magpies in the neighbourhood, and if a rabbit be left dead in a trap when removing the catch of the morning, and occasion taken to set two or three quick-

striking gins around it, repeated settings of the traps are sure to secure some of the vermin.

Jays have predilections for certain trees, chiefly oak and ash, the former of not large size, and a trap or two fixed on the branches about two-thirds up and close to the trunk will prove efficacious. The traps represented in Figs. 50 and 51 are the most suitable.

Some gateways are particularly affected by magpies as places from which to observe the surrounding fields, &c., when on the look-out for quarry. Nearly every gate has a side-piece by which it is hung to the post a foot or so higher than the top bar, and any magpie taking a look round will doubtless get upon the more elevated portion. It is usually easy to take the frequenters of such positions by placing a trap upon the top of the wood, and having set and adjusted it, fasten it to the wood by means of a large wire staple over the ring of the chain, which must hang down on the post end of the gate. These are only a few typical positions where magpies and jays may be trapped for, but they should prove suggestive of many others, many of which have been indicated from time to time when I have had to deal with the protection necessary for various forms of game.

Hawks and Owls.

Although the extraordinary and ill-advised prejudice existing in the minds of most gamekeepers against anything in the shape of a hawk or an owl has, to some extent, been overcome, there are still great numbers of them who obstinately persist in classing amongst winged vermin a number of birds which are not only not injurious in the preserve, but may be actually beneficial. It seems almost a hopeless case to try to persuade some keepers, and equally so other persons, that the owls generally, and some

of our few remaining hawks, are not predatory amongst game. If they would be content to hold to their old and mistaken opinion and leave the birds alone, it would not matter; but in spite of everything shown them to the contrary, they persist in ruthlessly destroying them without rhyme or reason. The only way to deal with the matter is for the owners of the preserves to take it into their own hands and make the unwarrantable killing of owls and hawks a cause for dismissal. Although there are several hawks and one or two owls whose habits, if strictly inquired into, would lead to no pleasant disclosures, there are only two or three whose modes of existence warrant their destruction by the game-preserve. The greater part of the hawks and owls which still bestow their company upon us are now becoming so scarce that, if we want to continue to reckon them among our British birds, their preservation will be as necessary as that of the pheasant and our other game, and it is therefore needful to advise gamekeepers and others to kill only those whose numbers and destructiveness would otherwise prove a hindrance to the rearing of game.

The hawks which are really destructive may be numbered on the fingers of one hand, and when we count up all the British hawks, the necessity of a wholesale killing of all the members of the tribe is far from apparent. I shall, therefore, only refer to those which really exert their predacity in a sufficiently destructive manner amongst game to render their presence in any number obnoxious.

Sparrowhawk.—This is probably one of the most numerous and destructive of our hawks, and coupled with its mischievous character, it has a most shy and wary nature, so that, although the proofs of its misdeeds are invariably but too apparent, the bird itself is frequently unobserved.

None but the most observant are able to study the whole routine of its existence with anything like accuracy ; for, except when hunting for its prey, its intense shyness and wildness are far too well exercised to admit of any close notice of its habits being taken. Wooded districts are mostly esteemed by it, but it seems always to prefer closely-cultivated lands—probably as its prey is then more plentiful. It hunts both in the open and in the covert, preferring, of course, in the latter case, woods where the trees are not sufficiently close to impede its progress, as it flies, sometimes at headlong speed, at others with gentle progress, in search or pursuit of any bird or other animal that may be luckless enough to be descried by it. When on the wing it alternates between an occasional exceedingly rapid flight and a sweeping, stealthy sort of motion, acquired apparently without movement of the wings. Should it, thus flying, descry any kind of prey, its flight is changed to a hover, and for a few seconds it scrutinises the object of attention. It will, further, often select a large stone, stake, tree, or such like, as resting-place, from which, during its temporary suspension of operations, it does not fail to keep a vigilant look-out. This feathered vermin evidently prefers winged food to furred ; but although its chief source of sustenance is found in birds, an occasional rabbit or a leveret does not come amiss.

The nest of the pigeon hawk—as it is sometimes called—is rarely of its own construction ; often an old nest is chosen, formerly built and used by a crow, magpie, jay, or a wood-pigeon, in some fir or other tree—oak or ash for choice ; or, perhaps, a solitary jackdaw's nest in some ruin or neglected house is selected, and becomes the receptacle of its eggs. The sparrowhawk nests in April and May.

Kestrel.—This is probably the commonest of our

British hawks, but by no means of the same destructive nature that makes the sparrowhawk so notorious. It is to a large extent a migratory hawk, which accounts for the apparent sudden increase and decrease of kestrels from time to time in various districts.

Speaking generally, it may be said that the kestrel does but little harm amongst our game, but when nesting early, and other food is scarce, it will persistently raid young partridges and pheasants when they are in the chick stage. At such times the kestrel is both daring and cunning, and by no means easy to capture, so that more reliance must be placed upon the gun than upon traps to secure any kestrels bent on this kind of work. For the most part, however, its food consists of mice, shrews, and a great variety—although not great numbers—of small birds. Grasshoppers, beetles and their grubs, caterpillars, frogs, lizards, and slow-worms also form a portion of its dietary. As far as its haunts are concerned there is little to say, for it is fairly frequent throughout the country. The kestrel sometimes travels far afield to secure a nesting-place suited to its habits, but there is not much to note respecting its choice of situation for the same.

Hen Harrier.—This is another fine hawk, frequenting downs, commons, fens, moors, and marshy expanses, being more numerous in such localities than in cultivated or enclosed ones. It preys almost entirely on game of all sorts and on many moor-fowl, but it is an easily-captured bird. It seems a pity such a really handsome creature should ever be destroyed for the sake of a pheasant or two, or the like.

Marsh Harrier.—This is also locally termed “moor buzzard,” “puttock,” and “marsh hawk,” and will also occasionally be found in the trap set for other hawks.

Long-eared, Brown, and other owls are invariably regarded by gamekeepers as vermin; but although occasionally they may err, their general good behaviour and utility should suffice to preserve them from destruction.

The trapping of hawks is a considerably more difficult matter than the capture of any of the various birds hitherto discussed, and such being the case, it is necessary carefully to note the details the observance of which leads to success. The round hawk-traps (Fig. 59) are those most suitable, as these birds require a stronger and heavier one than do

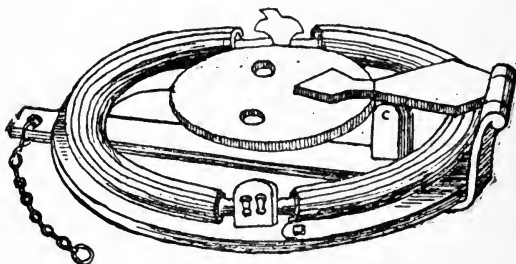


Fig. 59.—Humane Hawk-Trap with Rubber-Covered Jaws.

other vermin. The signs by which one can tell where to trap for hawks are generally pretty apparent in the shape of mauled birds, or the remains of such, which will be mostly met with on the outside of, or along any paths through, a wood or plantation; should the bird discovered appear to be but partly eaten, it may with advantage be employed as a bait to one or two light vermin gins neatly set around it. It will probably be observed that the sparrowhawk hunts the same ground every day; and, that being the case, considerable advantage is gained, as various baits may be placed and tilled in positions where their observance by the bird is almost certain.

The prohibition by law of the use of what is termed the pole-trap is, in my opinion, a thoroughly salutary proceeding, not only on account of the abuse of the practice which has obtained, thus causing needless suffering, but because the traps so set were as likely to catch any other bird than the one intended. The careful and assiduous keeper has ample means at his disposal for taking hawks without employing pole-traps, whether his business be amongst pheasants, partridges, or grouse. Promiscuous trapping for hawks meets no approval from me, but when actual and serious depredation is brought home to them the means which I have described for other vermin, and modified to fit the special conditions attaching to the hawks, are abundantly sufficient and effectual.

As regards owls, all that I have to say is that their wilful capture or destruction holds no place in the game-keeper's work, and their accidental appearance in his traps is a matter for regret.



CHAPTER XXXIX.

FOXES AND GAME.

THERE are very few districts where game is preserved which do not come also under the denomination of fox-hunting countries. As it is impossible to regard the fox as vermin in any other than wholly un hunted districts, it naturally follows that wherever any material number of foxes are sought to be maintained for hunting purposes, upon the gamekeeper falls the somewhat difficult task of tolerating within his coverts and other suitable portions of his preserves one of the worst enemies—if unchecked—to which furred and feathered game can be exposed. The statement is not infrequently made that it is impossible to have foxes and pheasants upon the same ground, and is, I am afraid, often put forward as a reason or an excuse for a poor show of birds. Without entering into the pros and cons of a matter which has been made the subject of endless arguments, it is necessary to state that, given a moderately fair condition of things, there is not much difficulty in preserving game, which includes having pheasants, and offering a reasonable supply of foxes besides.

Of course, in some districts where practically everything is made subservient to the interest of fox-hunting, game-preservation must suffer or possibly stand aside; otherwise, however, without any resort to the clandestine destruction of foxes I see no reason why game-preservation should not

go on quite easily, successfully, and extensively in a country where fox-hunting is regularly pursued under ordinary and reasonable conditions. The game is, of course, sure to suffer; to what extent depends, I consider, upon the keeper in charge of it, or the views held and instructions given to him by the owner of the preserve. There is, however, a considerable margin between sitting down and permitting the foxes to run riot over the preserves and going in for the destruction of them, so that if the happy medium be aimed at and struck, a state of things can easily exist which will have little fault found with it by the preserver and be satisfactory to the fox-hunting interest.

In the present volume we have to recognise, however, only the interests of the preserver, who is compelled to regard the fox as one of the worst enemies of his stock of furred and feathered game, and endeavour to prevent to the utmost of his ability injuries to it by foxes, but without taking, maiming, or killing the animals responsible for the mischief.

It is necessary to preface what I have to say upon this subject with the expression of the decided opinion that the fox is blamed for a great deal that it does not do, and is frequently made the excuse for inefficiency upon the part of more or less incapable keepers. Before accepting statements of the many kinds made as to the extraordinary powers of foxes as game-destroyers, it is as well to disabuse the mind of the belief that they will outwit every means taken to prevent their misdeeds. The contrary is the case. The fox, wary, cunning, and persistent as it really is, is as equally susceptible to fear of the scent, presence, and handiwork of man as almost any other creature that prowls through the preserve, and if one resolutely sets to work to prevent its depredations, success

usually follows the efforts made. There are, however, at times foxes which there would appear to be no means of circumventing. They generally turn out to be vixens, and the mischief they accomplish is usually done at clicketing- or cubbing-time, and when the cubs are reaching to be about half-grown.

The damage which foxes chiefly commit upon the ordinary preserve is at hatching-time of both pheasants and partridges and subsequently. They will also visit the rearing-fields at times, and seek entry into breeding-pens. Leverets much more than old hares fall victims to them, and rabbits in every stage of growth. In my opinion, a reasonable plenitude of rabbits *upon every part* of a preserve is one of the best safeguards for the birds against foxes. I do not say that it is the case upon every preserve, but it certainly is upon most of them. Nor is it the case when the rabbits are restricted to the coverts, and killed and kept down in field and hedgerow. The average fox, which by force of circumstances is compelled to lie in hiding by day, either in earth or couched in a lair, kills at night to satisfy hunger and not to gratify the lust of killing. So long as there are the coming and going of keepers and others in and around the preserve, so will the foxes be as stated. It is in the woods and plantations which are left almost entirely undisturbed, and where the unhunted or rarely hunted fox harbours, that most damage accrues from its maraudings and killings, prompted otherwise than by mere hunger.

Birds at nesting-time and immediately preceding are protected largely by Nature by the loss of their natural scent. Partridges, pheasants, grouse, &c., it is all one. Just before they brood, and during the period of brooding, the odour they throw off is foreign to the fox, and unless he actually views the sitting bird she is practically immune

from his attention. Whilst laying, however, the protection Nature accords is too feeble, if it exist at all, and the fox will then wind the game-bird, and, if possible, capture, carry off, and consume it. The necessity of locating all nests at the earliest possible moment is again brought home to the gamekeeper, and it is very necessary that steps should be taken to prevent injury to the nesting-bird. As regards partridge nests I have already mentioned one means of doing this. Another is to protect them by the practice usually known as "dressing" them. This consists in placing some pieces of sacking or other suitable material, which have been saturated with some substance possessing an odour offensive to foxes, and which they will not approach, in the neighbourhood and around the nests.

The best mixture for the purpose we have in view is composed of oil of burnt hartshorn (*oleum cornu cervi*) and creosote in equal parts. Cut some strips of sacking about 9in. by 2in., and soak them thoroughly in the mixture. Then, by means of twine previously attached to them, tie them securely to any bushes, &c., or to stakes set up in the ground at alternately 1ft. and 4ft. height from the surface, so as to form a fringe round the nest at about 2yds. radius from it. It does not trouble the nesting-bird, and no fox, dog, or cat will penetrate the circle of odour. According to the weather the malodorous stuff maintains its efficiency from ten days to a fortnight, and then requires renewing.

Similar material may be employed under like conditions for the protection of coops from foxes; but I am not predisposed in its favour for this purpose, although in the case of widely-separated ones, such as is found necessary with hand-reared partridges, there is more to be said in its favour.

The protection of young poults from attack by foxes at the time they are leaving the coops, and have not learned to roost at a safe distance above the ground, is frequently a troublesome, and maybe difficult, matter to deal with. Losses at this time are frequently numerous, and not always easy to prevent, because, to a large extent, what will alarm the foxes is also calculated to scare the poults and cause them to spread themselves about far more than would be the case if they were undisturbed. Probably the most effective means of warding off the foxes is to run lines of fairly thick wire round the borders of the covert where the birds are, and backwards and forwards through it at intervals of 10yds. or 12yds. apart. The wire should lie from 9in. to 15in. above the ground, and be neither very taut nor sag. Even better results may be secured by employing small loose-linked chain, a material which can be purchased secondhand at the price of old iron; this if simply laid about on the ground round about coops, and moved from time to time, will not be crossed by foxes.

Another device which I have employed with the greatest success, more particularly in outlying positions, for small lots of birds and the like, which scarcely warrant personal watching by night, is the following: I have some ordinary old-fashioned stable lanterns made, but with three narrow glasses, each fitted with projecting shields, so as to throw three distinct narrow beams of light. These lanterns are attached to cheap ordinary roasting-jacks, which are suspended from tree-branches or iron standards, so as to hold the lantern from 1½ft. to 2ft. above the ground. The lanterns are lighted, and the jacks set going as soon as the birds are comfortably and quietly at roost. I have found that the revolving gleams of light, coupled with the clicking of the jacks and their alternating

movement, prove ample protection so long as the jacks are kept going. They serve their purpose equally well when used for partridge-broods. The rough sketch at Fig. 60 will give a fair idea how the arrangement is set up.

Wherever it be possible, means more certain than any of those described in the foregoing must be taken to exclude foxes from game of tender age. This will be necessary in those districts where foxes are preserved and fostered and where it is, at the same time, desired to rear birds. As a rule, plain wire-netting, unless very well kept up, moderately new, and of considerable height, does not suffice to keep foxes out. They soon become accustomed to it when it is permanently erected, and will use all kinds of means to get through or over it. Amongst those which may be mentioned are continuous jumping at the wire to cause it to sag, so that they can clamber over, and, where it has become at all brittle by age, by biting and tearing at it so as to break through. Very few foxes know how to climb effectually, and well and strongly set up wire-netting 6ft. out of the ground, with strong four- or six-strand steel wire run through it at 3ft. and along the top, will stop them if it be provided with a device such as I recommend. A single strand of strong wire must be run along above the top of the netting, stretched

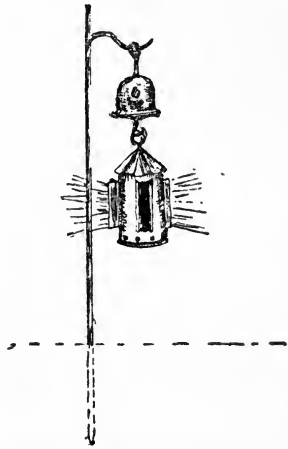


Fig. 60.—Lantern-Scare for Foxes.

from standard to standard, which if of wood should be provided with an iron eyelet stanchion upon the top. Upon this wire are suspended, as shown in Fig. 61, by means of bent wire pieces, lengths of ridging. This is a very cheap material made of galvanised sheet iron. As will be seen, the ridging works freely, and when either dog, fox, or cat seeks to surmount the netting it can gain no foothold, and falls backwards. Cats can climb, but foxes and dogs almost always jump up vertically, seeking to reach the top edge of the fence and then to clamber over. The device in question is an effective preventive of any-

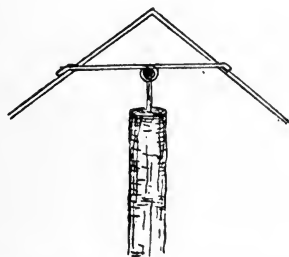


Fig. 61.—Section of Ridging for Wire-Netting.

thing of the kind. In view of the fact that the addition of this ridging to wire-netting entails but comparatively speaking small increased expenditure, there is little reason why it should not be always employed and so make the protection effective. Another form of cheap fencing for similar purpose which is also effective is that made of

split chestnut wood strung on steel wire. It is portable, cheap, and easily erected.

The greatest security obtainable for preventing the depredations of foxes is constant personal watching of the young stock being reared, but this can only be effective when the keepers or watchers are constantly on the move from dusk to sunrise. The mere placing of a keeper's hut upon the ground and the tenanting of it by night is of little value. It may even prove an attraction. It is the movement and presence at irregular intervals of human beings that frighten the varmint away.

CHAPTER XL.

POACHERS AND POACHING.

AFTER one has killed off all the vermin and reared a good head of game, it is no use expecting to find it there available for sport when the shooting-season comes on unless vigilance and attention are given to the prevention of poaching and the detection of poachers. Poaching is essentially of two kinds, and poachers of many ; but very much less of the real business goes on than is generally supposed, and a great deal more game-killing is practised by non-professional poachers. Strict preservation rarely leads to the prevention of poaching so effectually as when the labourers, &c., are treated fairly as regards the game. The most advisable way is to get all the men who are likely to go astray to take an interest in maintaining a good head of game, and the coverts should go poacher-free. There used to exist, and in many parts of the country there exists still, a feeling amongst the labouring men, skilled workmen, and others, on an estate, that the game on the squire's land should be respected so long as the squire respected them ; and, if this feeling be encouraged, there is no necessity for the unpleasantness and rancour existing between some owners of preserves and the people upon them. If the owner will instil into his labourers and all the men working upon the farms, &c., the idea that he trusts to them not to interfere nor

to permit interference with the game, they will soon fall in with it, and mostly work as assiduously for its protection as they would for its destruction if they were treated improperly. As a recompense for this, let them have money or game at the end of the season, and, if they would like a day or two at the rabbits, be it so. No one likes to be suspected, much less to be treated harshly, and if the idea be allowed to engraft itself on the village people that they are thought to poach, or that they dare not for fear of keepers and the law, they are sure to grasp the first and every succeeding opportunity to prove the contrary. In this way poachers are made; they commit the trespass once to revenge themselves or to spite their master or their landlord. The trespass is found to prosper, and the feeling of paying out the preserver is found sweet, and is repeated until the man's character is lost and he becomes a confirmed poacher. So much for the labouring man.

As to the regular poacher, the ne'er-do-well, the village loafer, he is a common object of the country, generally a labourer, who has always so much work to do that he never does any. He is generally a demure, bland person, obsequious to his betters, and always ready to volunteer information as to his every movement. This is a most annoying kind of poacher, because he is so dark and so modest over his business that one can rarely catch him. A little snaring, a little trapping, and a great deal of egg-stealing, are his chief accomplishments, and very often his wife and children have to play a part as well in the latter business, particularly in carrying away the eggs when they bring his dinner. At night he will often be busy, particularly with a stick, amongst the pheasants in windy weather, when there is a good moon, or he will not hesitate to use an air-gun, or even an approved firearm.

In his hands the net is a very effective article, and is employed alike for grouse and partridge. Hares are a speciality, and are taken with wires and gate-nets in the fields, and long and short nets in the pastures.

Besides the regular poaching labourer there are the men who only occasionally have a turn at poaching. They are generally a great nuisance, because one never knows when they are at their nefarious practice, and they are not worth watching continually. For game-stealers such as these there is nothing so effective as to lead them to believe that they are always being watched. Whenever he can, the keeper should make it his duty just to drop down upon them suddenly when at work, or to appear upon the other side of a wall as they are going home from or coming to work ; meet them accidentally upon the Saturday night, and see them the first thing on the Sunday morning after. Nothing deters them so much as this.

On the whole, I do not think the ranks of the professional poachers are recruited so much from the farm-labouring classes as from those living near and not engaged in agriculture. Mechanics of different kinds, village tradesmen, posting stablemen, contribute far more poachers than do the labourers, and upon such men I would be harder than upon farm people, because the latter have the opportunities so frequently afforded them for poaching, and the others seek them. They have, moreover, a knack of getting permission to use a gun to knock over a few pigeons, or perhaps to try their powers on a few rabbits. This leads them on, and they soon make a little poaching a regular item in their monthly routine. These men are for the most part owners of dogs of very dubious breed and character, but which, when it comes to picking up a hare or so, or "chopping" a few rabbits, are seldom deficient.

So far I have referred to the poachers which infest semi-preserved districts. They flourish only in parts where on one estate game is strictly looked after, whilst on the next it is anybody's property, *i.e.*, if there be any. The worst type of poacher, however, hails from the large towns, and he is generally a scoundrel in every sense of the word. Such men poach as a means of enriching themselves, and in their endeavours so to do they will stop at nothing. They generally work in gangs of from three to thirty, and when sufficiently numerous will take the coverts by storm, and set keepers, watchers, and owners at defiance. When in small gangs they will often offer resistance of the most stubborn kind, and many a scene of bloodshed has been enacted in collisions with desperate ruffians of this kind. The town poachers' favourite work is done at night, and they endeavour to keep within the number of five, and so avoid the severer penalties which the fact of being in larger parties renders them liable to. They have, moreover, favourite modes of working, employ a horse and trap, and skirmish about from place to place, taking a shot here and another there, being off again before the keepers can get near them. They are also the purveyors who supply partridges early enough to be in London on the First of September, who send grouse packed in coffins, and who are up to every move whereby their nefarious calling may be made remunerative. The town poacher, furthermore, is frequently a dealer in poached game, taking it from the local rural ones and disposing of it at a lucrative price. There are regular receivers of poached game in nearly every country town of any importance.

Besides these there are the men who poach not so much for the purpose of making money as from pure love of sport. These persons chiefly infest grouse-moors, and are

sometimes very destructive. In well-preserved districts they are absent, but in badly-preserved ones they and the gentleman poacher often come in for the best share of the sport therein obtainable. Anyone who preserves should be most careful never by any chance to infringe upon his neighbour's rights, or to allow his friends or dependants to commit a similar indiscretion. Not only does this produce ill-feeling between the proprietors, but the feud invariably reaches the keepers, and the amount of mischief these latter will do one another in the destruction of game must prove disastrous.

Further, there are some well-to-do men who think nothing of doing a little poaching now and then, chiefly in localities sparsely populated, where keepers are scarce, and whence the records of their misbehaviour are not likely to reach their acquaintances. Their favourite plan is to ask permission to take a short cut through one's ground, and "presume Mr. So-and-so will not object to their taking a shot at anything which may cross the path, provided the game is brought up to the House; it is merely the sport that is desired." The best answer to these gentry is to request them to keep clear of the place altogether.

The prevention of poaching is dependent, in the main, upon the gamekeeper; but, as I have tried to show, it depends also upon the proprietor of the preserve to no inconsiderable extent.

Of the duties of gamekeepers in regard to poaching it is necessary to state little beyond giving what are the chief qualifications of a good keeper, and to detail such aids as he may enlist in combating the attacks of poachers. A perfect gamekeeper is invaluable; he must above all things be thoroughly devoted to his work, and be prepared to carry out his duty under all adverse circumstances. Civility, firmness, and courage should be his chief charac-

teristics, besides knowledge of all details of his craft, alike as regards the practical and the legal portion thereof, so far as it concerns poaching and poachers; he should never commune except with his master, and on this subject he should be implicitly trusted.

With regard to the vexed question of the keeper—whether a head man or an under-keeper in charge of a separate beat—carrying a gun, I have but one opinion, and it is in the affirmative. If a man be fit to be a game-keeper he is fit to be entrusted with a gun; but at the same time discretion in its employment is necessary. Its uses are innumerable for vermin-killing, but its abuse is most reprehensible. The number of keepers necessary on a preserve depends upon circumstances too numerous to detail. The more roads and paths about an estate, the more keepers are required. The preserver should always endeavour, moreover, to enlist in an unofficial way as watchers the services of any trustworthy labourers or others with outlying cottages, never giving them power to act in repressing trespass, but employing them simply as informants.

Whenever any raid by more than two or three men is about to take place, in nine cases out of ten it is known beforehand, and the man who holds the information will generally tell it if appealed to in a proper manner. No one can do this better than a sharp labourer, whose resort to the local ale-house for a gossip occasionally would be unsuspecting. A stray word as to the keeper's whereabouts by him—although misleading—would be accepted as gospel, and is as sure to gain hints of any projected enterprise as it is to be believed.

There is a good deal to be learnt as to the proper mode of capturing or of interrupting poachers. Nothing puts them off so easily as to know that they are being watched

or looked for. Uncertainty as to the whereabouts of the keepers is to them a most disturbing influence, and knowledge of where they are is regarded as a boon. In the case of serious raids, when an affray is expected, the keepers should always endeavour to surround and overmatch their opponents. Watchers and helpers should be instructed to work in threes: this gives them an immense advantage. If possible, guns should be dispensed with; but I should never allow keepers to encounter the determined ruffians who may comprise a gang other than on equal terms, and should freely entrust reliable men with revolvers, to be used, be it noted, solely in defence of life or to threaten. Whenever possible, the aid of the police should be obtained, because they possess many important powers, particularly in regard to the highway, on which gamekeepers have no power to act unless called upon by a constable.

The powers possessed by gamekeepers for dealing with poachers are far more restricted than the vast majority of them presume to be the case. It is most usually due to the keeper's want of knowledge, causing him to act outside the law, that failures to convict arise. Did gamekeepers as a body possess more precise knowledge of how they ought to act within the law, and not according to what is only irregular custom, more convictions would be secured and poaching offences be more successfully dealt with. In connection with what I have to say upon poachers and poaching I shall define what a keeper may do and what he may not do by virtue of his office in dealing with poachers and trespassers, as it is most necessary to observe these restrictions if a conviction in full measure is to be secured.

It is a common practice for keepers to search supposed poachers or trespassers for game or the means of taking

or killing it, but a gamekeeper possesses no right of search whatever, and anybody, poacher or otherwise, is quite justified in resisting it. Nor is he entitled to seize either guns, game, dogs, nets, or traps, except under well-defined conditions to which I shall refer presently.

Further, a gamekeeper who in virtue of his licence challenges anyone carrying a gun or employing a dog, and ascertains that he has no licence, can only inform the police or an Excise officer, or in case of suspecting anybody he can lay an information in these quarters whether he hold a licence or not, but he can make no demand upon the person suspected.

As regards simple trespass a keeper's rights are clear, but less than is generally thought to be the case. He must ask trespassers upon his master's land to leave by the way they came; if they refuse he may obstruct their advance in any other direction. He must not employ force himself, but must summon aid to assist him quietly. If the trespassers prove obdurate, and such aid be not forthcoming, the keeper can only warn them and endeavour to make better arrangements upon any future occasion. The same applies to persons upon the highway who seek to obstruct shooting. They may be removed if assistance be obtained and no more force than necessary is employed.

Other matters of simple trespass may only be dealt with as follows:—If the owner, &c., of an adjoining preserve shoots into land under the keeper's charge, the latter can only warn him and inform his master; if the former's dog makes a practice of trespassing he can only inform the dog's owner or his keeper and warn him that traps will be put down. A gamekeeper or his dog is not entitled to enter adjoining land to pick up dead or

wounded game, and in the latter case would be liable to prosecution for trespass in pursuit.

It is in connection with day and night poaching that the gamekeeper's rights are of most importance, and the conditions under which he acts must be correctly observed. Trespass in pursuit usually constitutes the offence, and it is the keeper's duty, if he knows the men poaching, simply to lay an information against them; if he does not know them, he must demand their names and addresses, and if he believes them to be given correctly he must order them off the land and lay an information. If he be convinced the names and addresses given are false, or if they refuse to obey his orders to leave the land, or, having left it, return, he then possesses the right to arrest them, convey them to the police station, and lay his information. If he see newly-killed game actually in their possession he can demand it in the name of his master, and, if necessary, seize it. He is not entitled to search them for what he may suspect them to possess.

Except under the above circumstances a gamekeeper possesses no right of arrest unless the poachers be five or more in number, or any of them be carrying a gun, or any of them by threats or acts of violence endeavours to prevent the keeper from ascertaining their names. Whatever the outcome, whether he fail or not, then the keeper has to lay an information for the more serious offence of being one of five or more, armed and endeavouring to prevent or actually preventing him by violence from executing his duty, and of being trespassers in pursuit to the number of five or over.

It is not generally known that a gamekeeper who witnesses a trespass in pursuit of game upon land over which he has no authority is, however, quite competent to lay an information against anyone he may see poaching

there, and secure a conviction. It is customary, however, to have an understanding with the other owner upon the subject; but in cases where for some reason or other the owner of adjoining land is indifferent upon the subject, or, possibly, even opposed to game-preservation, the gamekeeper is perfectly able to prevent such land from being made an opportunity for indirect or direct interference with his own charge.

It is in connection with night poaching that the gamekeeper is vested with his largest powers, which naturally add greatly to his responsibilities. Here it is that his powers of arrest are largest, but even then there is a restriction, and a very important one at that. It will be made clearest probably by stating that the power to arrest is only vested in a gamekeeper whose master is the owner or the occupier of the land. It follows that the *shooting tenant's*, or any other person's except the owner's or occupier's, keeper does not possess and must not exercise this right as regards night poaching, although he may exercise the right in regard to an indictable offence committed between 9 a.m. and 6 p.m. of the daytime. Furthermore, the right of arrest as possessed by the owner's or occupier's keeper is also limited. He must not lie in wait for suspected poachers going to or coming from his land; he must not exercise his power of arrest upon land where there is no game, except rabbits, unless the poachers are actually engaged in taking rabbits, or if they be three or more in number, nor if the land upon which they may be is a warren. A gamekeeper possesses no right to search night poachers, nor to seize their guns.

With the exception of the limitations above set out, the gamekeeper possesses the right of arrest of night poachers, provided they be three or more in number, if upon the land for the purpose of taking rabbits or game, or less

provided they be actually engaged in doing so. The keeper's sphere of action as regards night poaching extends also to the gates, gaps, and outlets leading to the public road, highway, or paths, and also to these roads and paths if the keeper's employer owns or occupies the land on one or both sides of them. If the keeper be in hot chase of poachers, his sphere of action in this respect also extends to ground adjoining that of his master. He may also call upon other persons to assist him in arresting, in which case their powers become identical with his own.

As soon as possible after an arrest is effected, the culprit must be handed over to the police and, whenever possible, the gamekeeper should always endeavour to secure the assistance of the police, who can stop, search, and arrest presumed poachers on the high road and other places to which the powers of the individual gamekeeper do not extend.

I have now cited the main points in respect to the gamekeeper's powers as regards poachers. It is most necessary that he should always act within them, because in almost every instance the poaching fraternity are more minutely informed as to them than he is himself, and seek to induce him to overstep these limits when they come into conflict, so as to be able, if possible, to stultify the keeper in the eyes of the authorities.

It will be seen that the legal rights of the gamekeeper do not carry him as far as his duties as such frequently require, and it might very well be that they should be extended were it not for the fact that it is, upon the whole, customary to extend very much more consideration to the poacher than to any other kind of thief. There is, moreover, a widely-spread habit of investing the deeds of the poacher with a great deal of mystery and even romance of which the poacher, in fact, is quite guiltless. It is

therefore needless to enter into lengthy particulars of the actual or supposed ways of the fraternity, for, as a rule, when brought down to the level of hard fact, they must be and are very simple. Poaching is nothing more than the capture of game by quite ordinary methods, which the gamekeeper could as easily put into execution as the poacher, and all of which should be known to him, and in the ordinary course of events will come to his knowledge during the course of his apprenticeship and the development of his craft. All that the poacher does is to endeavour to apply these methods illicitly whilst evading the discriminating and intelligent observation of the gamekeeper and those allied with him. All sorts of wonderful and mystifying powers have been accredited to poachers. Believe me, there is nothing in it all. If they succeed in bluffing the keeper it is because they bring greater knowledge, greater perseverance, and greater skill to work than the keeper, run risks which his possible delay or default assists, and hoodwink him with greater cunning and energy than he displays.

The employment of mechanical aids to keepers in the form of alarm-guns, which have of late come into greatly-extended use, is frequently of much service, provided too much reliance be not placed upon them. If a preserve be undermanned they may very well serve a useful purpose, and as the rule is rather to err in this direction, resort must be made to them for giving notice of the entry by unauthorised persons in unwatched or distant coverts. There are many effective ones on the market, some simple in action, others more complex, giving double alarms, firing rockets, and lighting flares when set off. They may be made to serve a very good purpose if handled discreetly and not much parade be made of their use.

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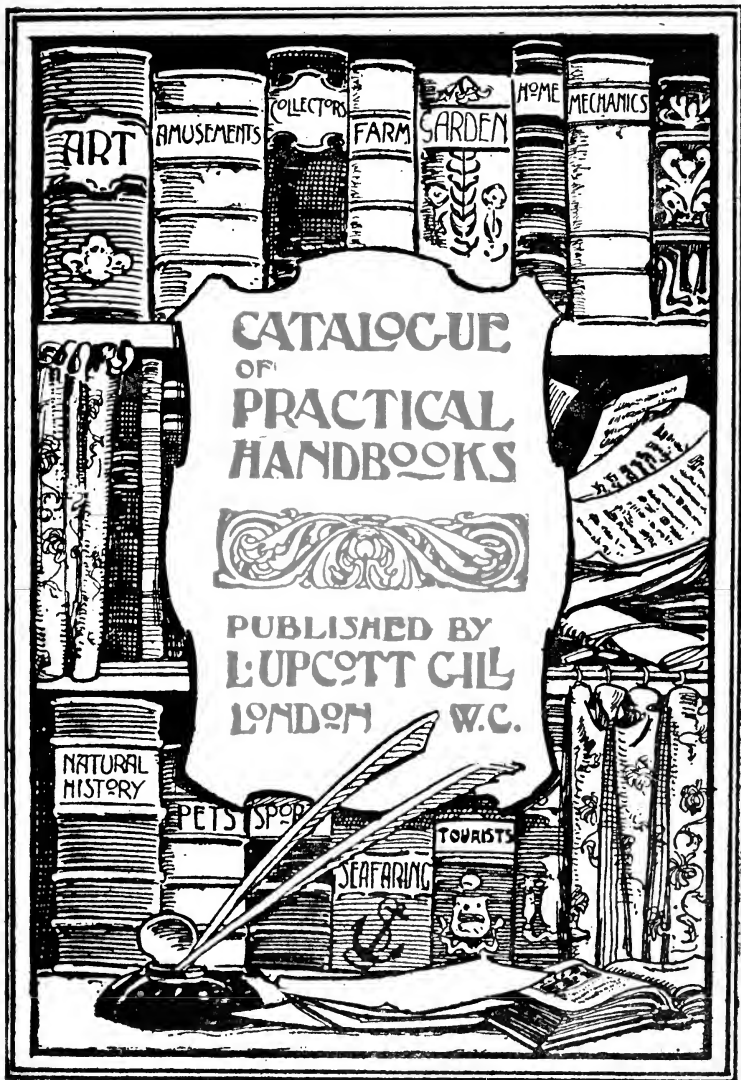
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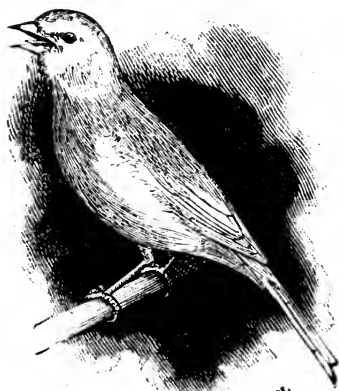
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