

# Ruffed Grouse Reared by Hand

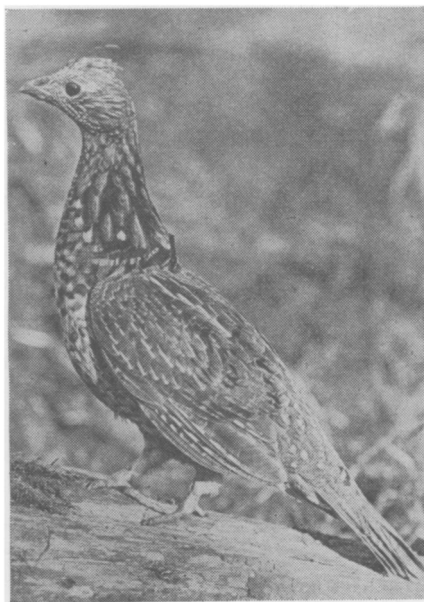
By MARJORIE MACDILL

"Peep, Peep, Peep!" and a dozen tiny bits of brown fluff interrupted their meal of sour milk to scatter to the far side of the commodious pen in front of their brooder.

"These," said Dr. Arthur A. Allen, who has done the impossible in raising ruffed grouse in captivity, "are only a few days old. But here," pointing to another corner of the side hill dooryard on the edge of one of Ithaca's beautiful gorges, "is the group of twenty of which I am particularly proud. They are two months old now and we have lost only one. Quite a record for ruffed grouse."

"Of course," he added, "it is too early to make any rash prophecies but we have succeeded in overcoming a good many obstacles that have been met repeatedly both in my own experience and in that of others who have tackled this proposition. So we feel that at least a step has been made in the artificial propagation of a game bird that has become increasingly scarce in regions where it was formerly plentiful, and that at last we have a practical method of rearing them to suggest."

This energetic young man, whose skill in handling shy wild things has converted the grounds around his home into a miniature aviary, is professor of ornithology at Cornell University. For the past ten years he has been devoting a large part of his time to work on the ruffed grouse, whose drumming was once a familiar sound in the woods of all the north-eastern states as far south as North Carolina and as far west as the Rockies. In a small enclosure at one side of sylvan dooryard tiny offspring of the wood duck, sometimes called the shyest and most beautiful of American game birds, take refuge under their bantam foster-mother's wing. In the shadow of trees and shrubbery hold forth gorgeous Reeve's pheasants, hardy woodland birds that Dr. Allen hopes may some day be developed to the point where they will live as successfully in this climate as the introduced ring-necked pheasant. Unlike the latter they prefer woodlands and not open fields and the farmer's corn crops. A pool in the gorge below has been fenced off for water fowl, while behind wire screening in still another corner flutter a flock of young meadow larks with



RUFFED GROUSE, *America's ideal game bird*

their lemon colored breasts, the scholastic property of a graduate student engaged in research on the habits of this well beloved whistler of the fields.

But the greatest amount of space is given over to the grouse chicks.

It is well known to sportsmen and naturalists that this bird goes through more or less regular cycles of abundance and scarcity. Recent years, however, have seen a downward trend in the grouse population that in some states approaches downright extermination. New England still has a fair number. In parts of Pennsylvania, probably owing to a combination of intelligent game laws and the possession of many miles of wooded territory such as the grouse best likes, a good many have survived; but these records are unique. The years 1927 and 1928 saw the lowest ebb in the number of grouse throughout their ranges in both this country and Canada, that has ever before been recorded. Many believe that an epidemic is responsible for this great decrease of the finest of American game birds, but it seems more probable in the light of much of Dr. Allen's work that it is due to a variety of reasons.

Running down the cause, or rather causes, of this so-called grouse disease, and at the same time trying to develop a practical method of rearing baby grouse in captivity, have been the two interrelated avenues of re-

search by which the Cornell ornithologist hopes to restore the bird to a degree of its former abundance in the woodlands throughout the north-east. Gradual replenishing of coverts and wise game laws should do the rest in recovering for American sportsmen one of the favorite prizes of autumn game bags.

Dr. Allen first began to try to raise grouse chicks in 1919 when an experimental game farm was established at Cornell University. His experiments were just getting a fair start when the farm perished from lack of financial support from the state legislature. So there was nothing to do but carry on in the limited space around his own home.

Here, within the confines of his own dooryard, he found he had an excellent chance to become familiar with various diseases to which the bird is subject. Anyone who has tried to grow young turkeys knows something of the proposition he was up against. One can start early in June with a likely brood of young turkey chicks and feel lucky if he has four survivors by the first of August. This familiarity naturally made him more observant of birds in the field and led him on to the track of valuable information.

The disease most fatal to grouse chicks turned out to be identical with one that attacks young chickens, turkeys, pigeons and canaries. It took its heaviest toll before the victims were three weeks old and is caused by a minute animal parasite of the intestinal tract. The scientific name for this grouse variety of infant's colic is coccidiosis. Blackhead, another disease all too well known to turkey growers, was also a source of trouble in the young grouse. Like coccidiosis, it is caused by a minute protozoan, possibly the same one.

Eventually he discovered that both these parasites were traceable to the bantam hen foster-mothers that were helping him bring up his experimental chicks. Most domestic fowls, though subject to these diseases, usually acquire immunity, but still act as carriers. For this reason the bantam foster-mothers had to be abandoned and the grouse babies entrusted to the more impersonal but sanitary protection of heated brooders. In the wild state there is very little chance of infected birds spread- (*Turn to next page*)

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ing these diseases until they become very abundant and range over the same ground day after day. In the seasons when very few young are reared in the coverts it may well be that one or the other of these diseases are to blame, the ornithologist pointed out.

A much more insidious disease, however, took off many of the survivors Dr. Allen had succeeded in bringing almost to maturity. It was found to be caused by a stomach worm. From careful autopsies on birds found dead in the field, it appeared that it was responsible for a large number of deaths of grouse in the wild state as well.

About this time (1924) the grouse research at Cornell began to attract considerable attention. The American Game Protective Association decided to get behind the movement and money was subscribed to carry on the work on a more extensive scale. It was decided to extend particularly the investigation of the life history of the parasites discovered preying on the birds. The cooperation of sportsmen throughout the grouse country of America was enlisted to aid the cause by sending in specimens of birds found dead in the field. Directions for preserving them for mailing and questionnaires about the number of grouse present in the coverts and what food they ate at different seasons of the year and similar points were broadcast through the game journals. In short, every attempt was made to uncover as much of grouse activities as possible from the time an egg was hatched until the young were in the nest again. For it was felt that it was impossible to foretell what little fact would turn out to be of the utmost importance in shedding some light on the life history of the attacking parasites and consequently on the control of diseases.

As a result of this drive undertaken in 1924 and 1925 nearly 900 specimens were received in the season 1925-1926. From studies made on these birds it was evident that no one disease is responsible for the disappearance of grouse. Over twenty different parasites and diseases were found as the result of this part of the investigation. Some of these, Dr. Allen declared, are abundant and of general distribution while others may



DR. ARTHUR A. ALLEN of Cornell University, with a flock of his home-reared grouse

turn out to be of only local importance.

Meantime, each spring saw several flocks of fluffy brown grouse babies hatched out at the Allen home. Brooder substitutes for the bantam mother marked a great step forward. The eggs were hatched in an incubator and the new chicks left to the tender mercies of a heated brooder opening into a wire enclosed pen where they are free to run around in the sunshine when the weather is fair.

"There are two very important points in rearing grouse in captivity," said Dr. Allen. "These are sanitation and nutrition.

"Pen, brooder and chicks must all be moved repeatedly to different parts of the grounds every few days to avoid reinfection from parasites. By avoiding the foster-mother carrier and changing ground frequently we have been able to keep the young birds free from parasitic infections during the critical first few weeks during which such severe losses were suffered when the work was first begun.

"Food, naturally, must be given very careful attention," he continued. "The grouse farmer will need food that approximates that of the bird in the natural state yet it must be such that it can be raised in quantity at not too great a cost. We give young chicks sour milk at the beginning but our first trouble is to get them to eat

it. New-hatched grouse instinctively try to catch their food on the fly. They don't look for it on the ground but want to pick it out of the air or off the bushes. So we smear sour milk on shingles and set them up against the side of the brooder. Then they learn to know it by sight in a few days and eat it out of a dish. Later on we give them ground hard-boiled eggs, pheasant meat and a little cracked wheat and sunflower seeds. We do not give them corn. In general they require very little grain. Wild grouse live on fruits a great deal, such as strawberries and wild blackberries. So we have tried them out on things like mulberries and raspberries and find they do very well.

"Since grouse need a certain amount of insect food we have been meeting this requirement by rearing bluebottle and greenbottle flesh fly larvae for them. This is a rather troublesome and disagreeable feature, however, that we hope to simplify somewhat when we have the method worked out in shape to present as a practical means of grouse rearing on a large scale."

The season for 1926-1927 was marked in grouse history by an invasion of goshawks swooping down out of the north. Goshawks are among the fiercest of American birds of prey that have been known in bad years to snatch a hunter's kill away before he can pick it up. They have a special fondness for grouse. During this particular season they slaughtered them in enormous numbers in some regions. This was probably one reason why the grouse population reached an extremely low level in 1928 throughout many parts of its range. All of the provinces of Canada except Quebec and the Yukon declared a closed season, as well as nine of the northern states in this country.

Because of this shortage no effort was made to collect specimens for investigation since it was felt that the few surviving birds left in the coverts were probably healthy anyway and needed protection to help bring the numbers up the following year.

In spite of the recent shortage, the total number of birds examined in the laboratory since the work started, taking together the ones studied at Cornell and those handled in a separate investigation in (*Turn to next page*)

# New "Triangle" Parachute

A revolutionary type of parachute that may ultimately take the place of the standard one now in use has been developed by the Army Air Corps at the experimental laboratories at Wright Field, Dayton, Ohio, after more than a year's research.

Though the materials, general size and principle of operation of the present-day "flyer's umbrella" are utilized, the newcomer has a different kind of mainsail, far more stability and safety of operation, and a unique type of pilot "chute".

Instead of the circular mainsail a triangular one has been substituted, with two corners rounded and the third sheared straight across. The shroud lines extend down, spaced regularly as in the standard 'chute, except across the sheared-off corner, which has no shroud lines at all. The result is that when the parachute is open, this corner forms a tail-like vent through which the air escapes.

More than a dozen jumps and a hundred dummy drops have been made with the new 'chute. These indicate a decreased oscillation and shock to the jumper at the time of opening, besides greater steerability in descent. This improved operation is accomplished mainly by the new mainsail. The air escaping through the tail-like vent propels the 'chute horizontally at a speed of from three to four miles an hour. Because the parachute inherently possesses this horizontal motion, steering can be accomplished by the manipulation of the shroud lines and the 'chute can be turned so that the vent is with or against the wind, controlling the desired direction.

The decreased shock to the jumper results from a second round vent at the apex of the mainsail. Prior to operation the vent is closed, but when the 'chute starts downward, the vent automatically opens. It causes a very

slight swerve from course and virtually no swing.

A feature adding to the safety of operation upon opening is the new springless, non-foulable pilot parachute. It is 30 inches long and 36 inches in diameter. The lobes have partitions which extend to a long central elongation fastening directly to the apex of the mainsail, making shroud lines unnecessary.

Moreover, whereas in the standard 'chute the actuation of the pilot umbrella is supplied by springs, in the triangle 'chute it is achieved by a different method of packing.

The new pack has rounded corners for better wear and to prevent folds of the silk slipping through. As in the standard parachute, the shroud lines are packed in pockets, zig-zagged across the bottom of the pack. The mainsail is folded on top.

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## Ruffed Grouse Reared by Hand—Continued

New England under the direction of Prof. A. O. Cross of Bowdoin College and a western investigation in charge of Prof. D. J. Leffingwell of the Washington State College of Agriculture, has reached the neighborhood of 2600 specimens. The examination and study of birds in such numbers has, of course, given ornithologists a much better picture of the life history and physiology of the ruffed grouse than was ever possible before.

One of the most interesting features of this investigation was the recent attempt to link grouse up with tularemia, the rabbit plague that has swept over the country in the last few years and which has attracted wide attention from the number of human victims that have succumbed to it. It was shown by Dr. R. R. Parker of the Spotted Fever Laboratory and Dr. Green of the University of Minnesota that grouse could be artificially infected with the disease and it was thought that it might be transmitted to the birds by natural means through the rabbit tick with which they also are infested. As yet, however, Dr. Allen points out, not a single known case of tularemia in a ruffed grouse contracted by natural means even in captivity has been



*THIS BRIGHT YOUNG FELLOW is just seventeen days old*

found. The problem is complicated by the fact that tularemia is difficult to identify in birds. The only sure means of establishing the case is to reinfect guinea pigs with serum from the dead birds, which in the case of true tularemia will produce typical lesions in these animals. The experiments with tularemia and grouse are being continued but at the present time no definite knowledge has been

brought to light that this disease is in any way responsible for the grouse shortage of the last year.

Dr. Allen's activities in this work are not limited to grouse farming in his dooryard and grouse autopsies in his laboratory. He is also deeply concerned with the conditions of grouse life in the wild. About seventeen miles southeast of Ithaca is a tract of hill land of about 13,000 acres, known as Connecticut Hill. Within this area the New York state conservation commission has decided to develop a game refuge and demonstration forest. Options have already been taken on about 4000 acres. In this area Dr. Allen and one of his associates, Gardiner Bump, picked out a tract of land of about 1200 acres and by the expenditure of infinite pains and time took a census of all the grouse it contained. Records were made of all the plants and shrubs with special reference to the ones that partridges, as the farmers call them, like to eat. A careful check will be kept on the number that survive each year and every attempt made to find out, in so far as possible, all about the private life of the grouse tenants of this typical piece of covert.

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