

SCIENCE

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GAME-PRESERVATION IN GERMANY.¹

OBSERVANT Americans, travelling by rail through Germany during the late summer or autumn months, are often astonished by the abundance of hares, partridges, and pheasants, which are to be seen in the fields and thickets along the railways, or by roe-buck — from two to a dozen or more together — feeding in pastures and meadows, and scurrying into the adjacent woods on approach of the train. This surprise is usually augmented when, at some country station, the traveller sees a party of sportsmen returning to town with the proceeds of a day's shooting. Remembering the denuded condition of the older and more thickly settled portions of our own country in all that respects field and woodland game, the impression is apt to come home to the transatlantic tourist that in this respect, at least, the Germans manage better than we have done. In fish-culture and the skilful breeding of many kinds of animals, the Americans are unsurpassed, if equalled, by any people of Europe; but, in making marketable game a plentiful product of fields that have been cultivated since many centuries before America was discovered, the Germans have, it would seem, set an example which we may study with interest, if not profit.

It is proposed in the present report to consider the German system of game protection and management from a purely economic standpoint. Aside from all consideration of shooting as a fascinating, healthful sport for men who are ordinarily confined to the wear and fatigue of city life, there is the practical question whether the growth of wild game may not, under proper conditions, be made to add in America, as it does so largely in Europe, to the annual cash product of fields and woodlands, even in the most thickly settled States and in the vicinity of large cities.

It was but natural that a people busy with the task of clearing and settling a country so vast as ours should, until within recent years, have regarded game birds and animals as part of the spontaneous product of the land, the property of whoever might take the trouble to pursue and kill them. Not within many centuries has any such easy-going indifference on that subject prevailed in these older nations of Europe. From the days when the game belonged to the crown, and hunting was the exclusive privilege of the king and the nobility, game birds and animals have been recognized as property not less tangible and defensible than domestic poultry or cattle.

With the imperial preserves of Germany and the vast estates of the wealthier aristocracy, where stags and pheasants are reared and tended by liveried game-keepers for wholesale slaughter on princely hunting-days, the present report has, for obvious reasons, no concern. All that belongs to a social and political condition so remote from our own as to divest it of all practical interest in this connection. But the imperial and grand ducal preserves cover but a small proportion of German territory. The vast bulk of it is possessed by individual farmers and communes, and is leased, so far

as shooting privileges are concerned, to individuals or small clubs of professional and business men in the neighboring towns and cities for an annual rental, which amounts in the aggregate to many millions of marks, and constitutes one of the important revenues of the agricultural class. In no respect are the provincial governments of Germany more jealous of national interference than in regard to their game-laws. Prussia, Bavaria, Hesse, Württemberg, and Baden have each their separate code for the protection of game and the regulation of shooting privileges; but, as it will be impossible to consider them all within reasonable space, we may fairly select as an example the code of Prussia, which is as fair and intelligently framed as any, and will serve to illustrate the system which has proved so successful and advantageous in this country.

One of the important provisions of the Prussian code is that which permits any proprietor of landed property to kill game at proper seasons in any part of his premises that may be enclosed by a fence or wall, but which denies him this privilege on any piece of unenclosed land which is less than two hundred acres in extent. In the latter case the game on the farmer's land reverts to the care of the commune in which he lives, which rents the shooting privileges of all such territory within its limits, crediting to each farmer his due share of the aggregate rental, proportionate to the area of his land.

As nearly all farming-lands in Germany are owned in small tracts by peasant farmers who live in villages, and as such lands are rarely or never enclosed by any semblance of hedge or fence, it follows that most field-shooting is leased by the communal authorities at prices which vary from twenty to seventy-five cents per acre annually, thus adding an additional crop, so to speak, to the yearly product of the ground. These shooting privileges are leased usually for terms of six, nine, or twelve years. Competition is by auction at the office of the communal burgomaster, and the lease goes to the highest bidder who can furnish satisfactory guaranties as to financial responsibility. The lessee then becomes responsible, not only for the proper care of the game in the fields and woods covered by his lease, but also for whatever damage the game may inflict upon growing crops. Should the hares injure the beets and turnips, or the deer from the adjacent forest trespass upon the wheat or rye fields, the farmer summons the two communal assessors appointed for that purpose, who examine the premises, and estimate the amount of damage which the lessee of the shooting is required to pay. If he finds the tax excessive, he may nominate a third member of the board, and call for a re-appraisal of the damage. The lessee also employs a local game-keeper, who earns a yearly salary ranging from two hundred dollars to three hundred dollars, and whose business it is to look after the game, kill foxes, hawks, and other carnivorous creatures, and prevent poaching.

Nothing could better illustrate the universal respect for the rights of property in this country and the absence of that lawless, predatory spirit which pervades some less strictly governed communities, than the entire immunity from irregular depredations which is secured to partridges, pheasants,

¹ Report by Consul-General Mason of Frankfort, dated Jan. 3, 1891.

hares, rabbits, and other small game, even in the immediate neighborhood of populous German villages. The peasant farmer is satisfied with a system which secures to him a full cash value for all the game which his land may produce, as well as prompt payment for whatever damage the same may inflict upon his crops, and at the same time protects his fields from trespass by unauthorized persons or at seasons when the grain and grass might be injured thereby, for the game-laws carefully prohibit field-shooting until such crops are gathered.

An important feature of the protective system is the law which forbids any person from hunting or using a gun unless he is provided with the legal *Jagdpass*, or license. This license is issued by the local magistrate in each district to applicants of good standing, who must be not less than eighteen years of age, and, if under twenty-one years, must be vouched for by some responsible person. The pass is for one year, costs from seventy-five cents to three dollars, according to the varying regulations of the different provinces, and bears on its reverse side a checkered design showing the open and close months of the year for each kind of game. To be found outside of one's own premises with a rifle or fowling-piece and without a *Jagdpass* involves the confiscation of gun and accoutrements. This arrangement effectually eliminates the professional poacher and the predatory small-boy with the cheap shot-gun, who have been so destructive to singing-birds, as well as to furred and feathered game, in some other countries.

The game birds and animals of Germany include principally the stag, the fallow-deer and roe-deer, hares and rabbits, the capercaillie (or *Auerhahn*), pheasants, partridges, snipe, woodcock, wild ducks and swans, and several other varieties of birds, not to speak of fish-otters, foxes, and badgers, which are killed for their fur, or because they are destructive to fish and smaller game.

Keeping still in view the economic aspects of the subject, the practical question would be, which of these varieties might be most easily transplanted to the thickly settled portions of the United States, and grown there under conditions similar to those which exist in Germany. The climate of this country does not differ essentially from that of the Northern and Middle States of our Republic. With the exception that the proportion of woodland to open fields is larger with us than here, and that the American farmer keeps his land enclosed by fences, and lives on it instead of in a neighboring village, the principal conditions are nearly similar. The proportion of pasture and meadow to ploughed land is greater in most American districts than in Germany, but this would be to the advantage of the game rather than otherwise. In most States of the Union the laws distinctly recognize the right of the land-owner to the game birds and animals on his property, and enable him to defend that right against trespass. There would seem to be no reason why at least four of the species which are now grown so abundantly for sport and profit in Germany should not be at least equally successful in almost any part of the United States. These are the pheasant, the gray partridge, the hare, and the roe-deer, all of which live and thrive in proximity to man, and may be easily transferred to any locality suitable to their existence.

The gray partridge (*Rebhuhn*) of northern Europe is in size about midway between the quail and prairie-chicken of the United States, the former of which he strongly resembles in appearance and disposition. Although less beautiful than the red-legged partridge of southern Europe, he is not less

"gamy" in the field or delicious on the table, his flesh resembling strongly that of our native quail. This species lives in the open fields and meadows of Germany, even close to the villages and farmhouses, and subsists at all times upon food precisely similar to that of the American quail and prairie-chicken. The female lays in May or early June from sixteen to twenty eggs, and, if foxes, weasels, or cold, protracted rains destroy her young brood, she makes another effort and brings forth her second hatching in July. The partridge-shooting season begins in Prussia on the 1st of September, by which time the young birds, except those of the second hatchings above noted, are well feathered, strong on the wing, and nearly full grown. Each brood forms a covey, and, like the prairie-chicken, they are at first tame and comparatively easy shooting, but with experience and the advancing season they become wilder and stronger; so that, although they are always "game," and lie well to a dog, particularly when approached from leeward, they are in later October and November sufficiently difficult to satisfy the most exacting sportsman. Partridges sell in the market at from fifty to seventy-five cents each, and, although killed in immense numbers, are always in demand. It is no unusual thing in this region to kill during a season two or three hundred birds on a farm not exceeding a hundred and fifty acres in extent; and there are several preserves in the open fields along the Rhine, between Mayence and Mannheim, where the average annual score exceeds a thousand.

It is, of course, quite at variance with American or English ideas for a sportsman to sell his game or consider in any way its market value, but in Germany no such squeamishness prevails. The product of each day's hunt, except what the master wants for his own use or chooses to present to friends, goes to the game-dealer, who has a standing contract with the sportsman to take his entire product at prices agreed upon in advance, and which are rigidly adhered to.

Until within a few years most sportsmen who leased shootings in this part of Germany could pay their rent and hire of gamekeeper, and even save a profit, from the proceeds of their game. This enabled many men of limited means to lease lands which would have been quite beyond the reach of their unaided private incomes, and thus practically the whole territory — woods, field, marsh, and mountain — was then, as now, leased for shooting purposes. But, with the rapid increase of wealth and the growth of the class of men able to afford the luxury of hunting, the competition for the best grounds has become so sharp that the rental has advanced enormously within a short period, so that comparatively few shooting leases are now self-supporting; that is, paying by sales of game the cost of rent, game-keeper, and damage by game to growing crops. Many shooting privileges in this region which were leased at auction during the past year have brought three times the rental of the previous lease made six years ago, and some communes now pay their local and national taxes from the revenues thus easily obtained. When it is considered how burdensome taxation has become to the German peasantry, the advantage of being able to pay this obligation in hares, partridges, and pheasants grown spontaneously on their lands will be at once apparent.

The pheasant of Germany is identical with that of England, France, and Austria, and is an exotic in Europe, having been brought many centuries ago from its native haunts in the Himalayan districts of India, by way of Asia Minor, into European Turkey, Austria, and particularly Bohemia, where it is now found wild in immense numbers. The

pheasant is a showy bird, of moderate merit for the table, except as an ornament, but nevertheless much esteemed for its beauty and for the easy, comfortable shooting that it affords. Pheasants are easily bred in this region from birds or eggs obtained from Bohemia, where the females cost from one dollar and seventy-five cents to two dollars each, the cocks, in the proportion of one to eight or ten hens, costing somewhat less.

Any person who has a few acres of thick wood with underbrush or open thicket sufficiently tall to furnish good cover has the necessary conditions for growing pheasants, which subsist on wild berries, buds, and the grain that they pick up in the adjoining fields. During hard winters, when the snows lie long and deep on the ground, careful sportsmen keep their pheasants within limits by feeding them grain; but there is in this part of Germany, so far as can be learned, none of that wholesale growing of pheasants in parks like chickens, that is so common and so costly on the great manorial estates of England.

The cock pheasant may be lawfully shot in Prussia during the whole year, except June, July, and August; the female, only from the 1st of September until the end of January. In most preserves the hen pheasants are rarely or never killed unless the stock becomes too numerous, which it may easily do unless the birds are preyed upon by foxes, hawks, and weasels, which are the persistent enemies of game in most parts of Germany. For this reason foxes, cats, and even stray dogs found at large upon land rented for shooting purposes, may be, and usually are, killed at sight. Aside from its natural enemies, the pheasant is a prosperous and prolific bird, and there would seem to be no reason why it should not thrive abundantly in almost every part of the United States. Birds and eggs for breeding purposes may be obtained in almost any quantity from dealers in Bohemia; but, as the demand is considerable from France, England, and western Germany, it is often requisite to give the order some weeks in advance of the laying season, which is in April and May.

The roe-deer is the smallest and most nearly domesticated of the three species of deer which inhabit Germany. It is likewise the most beautiful, and its flesh is the daintiest venison known to the epicure. In color, form, grace, and fleetness it resembles more nearly the antelope than other species of deer. It lives abundantly throughout the forests of central Europe, but prefers thickets of underbrush in the vicinity of open fields and meadows to the darker and denser woods which form the haunts of the stag and fallow deer. It is this tractable, half-domesticated disposition, its willingness to live in close proximity to the homes of men, that makes the roe-deer the valuable game animal that it is. It is no unusual circumstance to find from six to a dozen of these shy, graceful creatures living in a piece of woodland less than thirty acres in extent, and they are so abundant in this region that hunting parties frequently kill in a single day within ten miles of Frankfort anywhere from ten to forty of them. The roe-buck may be killed throughout the year, except during March and April; but the doe is protected by law ten months out of twelve, and may be shot only from the 15th of October to the 15th of December. The buck sheds his horns in December, and from that time until May looks so much like a doe that he is comparatively safe from sportsmen; but in the early summer he is again in season, and until September, when the stag and the partridge shooting begins, he has the hunters practically to himself. Roe-deer which live in the neighborhood of culti-

vated fields often inflict damage upon the growing wheat and rye; but this the thrifty peasant takes immediate note of, and, under the law already noted, assesses the damage upon the lessee of the shooting title. For this reason some of the best hunting leases command but a small rental, and I know of one instance in which a sportsman pays only 150 marks (\$35.70) per annum for the rent of nearly a thousand acres, but distributes each year from \$1,000 to \$1,200 among the neighboring peasants for the damage done to their crops by his hares and deer. This occurs generally in districts where the proportion of wooded land to arable fields is but small; but the law which holds the game proprietor responsible for its depredations is an eminently just one, and takes from the farmer all temptation to destroy the game in self defence.

But the plain, reliable, every-day game of the average German sportsman is the hare. It resembles in appearance the brown American rabbit, but is much larger, and its flesh is decidedly superior; moreover, the hare, unlike the rabbit, never burrows, but lives wholly above ground, inhabiting the bleak fields in winter, with no other lair or shelter than a small open hollow scooped out beside a protecting clod or stone. More rarely the hare inhabits thickets and small woodlands adjacent to farms, but in deep, dark woods he is seldom found, and never in any great numbers. But in the open fields of southern and western Germany the hare swarms in such profusion as to form one of the definite products of the land. Although not entitled to high rank as game, either for the table or the sportsman, the hare is a coveted luxury to the poor and middle classes, and in some markets, notably that of Paris, is always in demand. At the same time it offers to the sportsmen a pot shot sufficiently attractive to amuse the most competent, and not so difficult as to discourage the inexperienced, gunner.

The mother-hare bears annually two, sometimes three, litters of from eight to a dozen leverets, which, although decimated by cold, wet weather, and preyed upon by foxes, hawks, and other enemies, still make a brave struggle for life; so that by September, when the shooting season begins, they are as plentiful as field-mice. Except for the few that are shot during the partridge-hunting, hares are not killed to any great extent until December, when the great *battues*, or drive hunts, are made, which supply the winter market. Although much less destructive to gardens and young trees than our rabbit, the hare is so prolific that, unless kept in check by judicious hunting, he might soon become a source of anxiety to the farmer. In view of this, the law provides that the lessee of field-shooting in Prussia shall drive-hunt the entire area of his lease not less than once in each year. Accordingly, the whole agricultural territory must be shot over by the *Treibjagd* process annually, and the operation is often repeated when the first hunt has left too large a surplus of hares for the next year's breeding. Drive-hunting for hares is not, perhaps, an exalted form of sport; but it is always sociable and jolly, and has the further advantage that it gets the hares.

For a well-organized hunt of this kind, from fifteen to thirty sportsmen are requisite, with twice as many men and boys from the neighboring villages, who are marshalled by the game-keeper to serve as beaters to drive the game. The fields or woods are then taken by sections as large as the line of hunters and drivers can surround, and, although with skilful shooting more or less game always gets through the line and escapes, the slaughter is often enormous. It is no uncommon occurrence for a party like this to kill in a

short winter day, upon 300 or 400 acres of wheat and beet fields within half an hour's drive of Frankfort, from 400 to 500 hares. As they average in winter about eight pounds in weight, the result of such a day's shooting would be nearly or quite two tons of game, — a quantity which it would be, of course, impossible to dispose of otherwise than by sale. Game killed in such quantities must either be sold or wasted; and in this country, where waste is considered sinful, the hares or deer or partridges, as the case may be, are turned over to the game-dealer, who during the season loads daily a special car for the Paris market. The game-dealer pays from fifty to seventy-five cents each for hares in Germany; they retail for from five to seven francs in Paris. The French capital pays yearly millions of francs for game brought from beyond the Rhine. By the sale of his game, the lessee of shooting-grounds recoups, more or less fully, his expenditures for rent and keepers, and the money goes finally to the peasant or landed proprietor upon whose premises it was grown. From the beginning of the hunting season until the end of December, 1890, there have been killed in Prussia alone, according to official statistics, 2,500,000 hares, which, at 2.50 marks each, the usual wholesale price, represent an income of 6,250,000 marks, or nearly \$1,500,000.

The invitations which are exchanged between sportsmen to make up the number of guns requisite for a drive-hunt constitute an important form of social courtesy in Germany. The entertainment always includes a mid-day breakfast, more or less luxuriantly served at the tavern in the nearest village or upon tables spread in the woods by servants, who bring warm dishes, wines, etc., from the home of the host in the city.

Such, in substance, is the German system. Could it be introduced successfully and profitably in the United States, and, if so, would such introduction prove desirable? Competent judges who have given the subject careful thought answer both these questions in the affirmative, and say that the game-laws of several Northern and Eastern States are already adequate to render the raising of game in the woods and fields of ordinary farms sufficiently secure to insure a successful result. A system which would add an additional crop to the farmer's fields and forests, and thereby increase substantially his cash income from his land, would certainly not lack support from the agricultural majority which controls most State legislatures.

There are, of course, many questions of detail which such an experiment would involve, and into which it is impossible at present to enter; but, after all that has been so successfully done in our country to restock the inland lakes and streams with fish, there ought to be some way of restoring in a measure the game birds and animals which were formerly so abundant, and which have become, through indiscriminate shooting, so rare to the sportsmen, so costly in our markets. This can only be done by making game-preservation easy, inexpensive, and withal profitable to owners of the land. The German system has made game abundant throughout the empire, and yields an important income to the class which is in most need of it.

The experiment in America would need to be systematic, but not necessarily expensive. A dozen pairs of partridges, pheasants, and hares, imported from Germany or Austria, turned loose on almost any American farm, and protected from molestation three or four years, would multiply so that they would thereafter hold their own against any reasonable and sportsman-like pursuit. The larger the territory in-

cluded in such experiment, the more certain would be its success. There is the disastrous experience of Australia with the English rabbit, which might make some American farmers timid about introducing the hare; but it must be remembered that the European hare is a very different animal from the rabbit of either Australia or America. Besides being far less destructive and prolific than the rabbit, the hare does not burrow, and being, therefore, always above ground and accessible, its numbers can be easily kept within safe and reasonable limits.

NOTES AND NEWS.

ON Thursday, May 21, the second annual banquet is to be given at the Mercantile Club, St. Louis, in honor of Henry Shaw, the founder of the Missouri Botanical Garden and the Shaw School of Botany.

— Dr. G. Baur will leave, May 1, for the Galapagos Islands, to be absent for six months. He intends to make the most careful examination of the fauna and flora of every island.

— At the annual commencement of the Jefferson Medical College, Philadelphia, on April 15, the honorary degree of doctor of laws was conferred on Dr. Daniel G. Brinton, in recognition of the merit of his researches in anthropology and ethnology.

— An international agricultural congress, says *Nature*, will be held at the Hague in September next, from the 7th to the 12th. A commission will be appointed at the Hague to arrange for the reception of the members.

— Dr. E. D. Warfield, at present the president of Miami University, has accepted the position of president of Lafayette College at Easton, Penn. Dr. Warfield, who is but thirty-two years old, graduated with high honors from Princeton in 1882, and afterward from Oxford University, England.

— A meeting of the New York members of the American branch of the English Society for Psychical Research will be held, April 24, at 8 P.M., in Room 15, Hamilton Hall, Columbia College. Dr. Richard Hodgson, secretary of the American branch, will read "Narratives received by the Secretary." All persons interested are invited to attend.

— Bulletin No. 9 of the Agricultural Experiment Station of the Rhode Island State Agricultural School, Kingston, Washington County, R.I., is devoted to a record of experiments in apiculture, including the following subjects: "Artificial Heat for promoting Brood-Rearing;" "Hive on Scales, and Sources of Honey;" "Carniolan Bees;" "Foul Brood, its Cause, Prevention, and Cure." Samuel Cushman is the apiarist of the station.

— According to a telegram sent through Dalziel's Agency, a magnificent grotto has been discovered near Ajaccio. As described in *Nature*, it is entered with difficulty, owing to the smallness of the aperture; but upon his entrance, the explorer finds himself in a vast and lofty hall, the sides of which are some twenty-five yards in height. From this there are several passages leading to an indefinite number of other chambers. A thorough investigation of the grotto has not yet been made.

— Dr. Jordan, president of Stanford University, at Palo Alto, Cal., has completed arrangements for the appointments to the faculty of the university, and has made the following selections public: Dr. Andrew D. White, ex president of Cornell University, to be the non-resident professor of history; E. Stanford of Lake Forest University, to be the associate professor in physics; Horace B. Gale of Washington University, St. Louis to be professor of mechanical engineering; Professor Joseph Swain of Indiana University, to be the associate professor of mathematics; Douglass H. Campbell of Indiana University, to be the associate professor in botany.

— The following are some results of a study of 197 thunderstorms in Russia in 1888, with reference to their speed of travel, as given in *Nature* of April 2. The author (Herr Schönrock) obtained as mean velocity about 28.5 miles an hour, with variation