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U. S. DEPARTMENT OF AGRICULTURE.

FARMERS' BULLETIN No. 234.

THE GUINEA FOWL AND ITS USE AS FOOD.

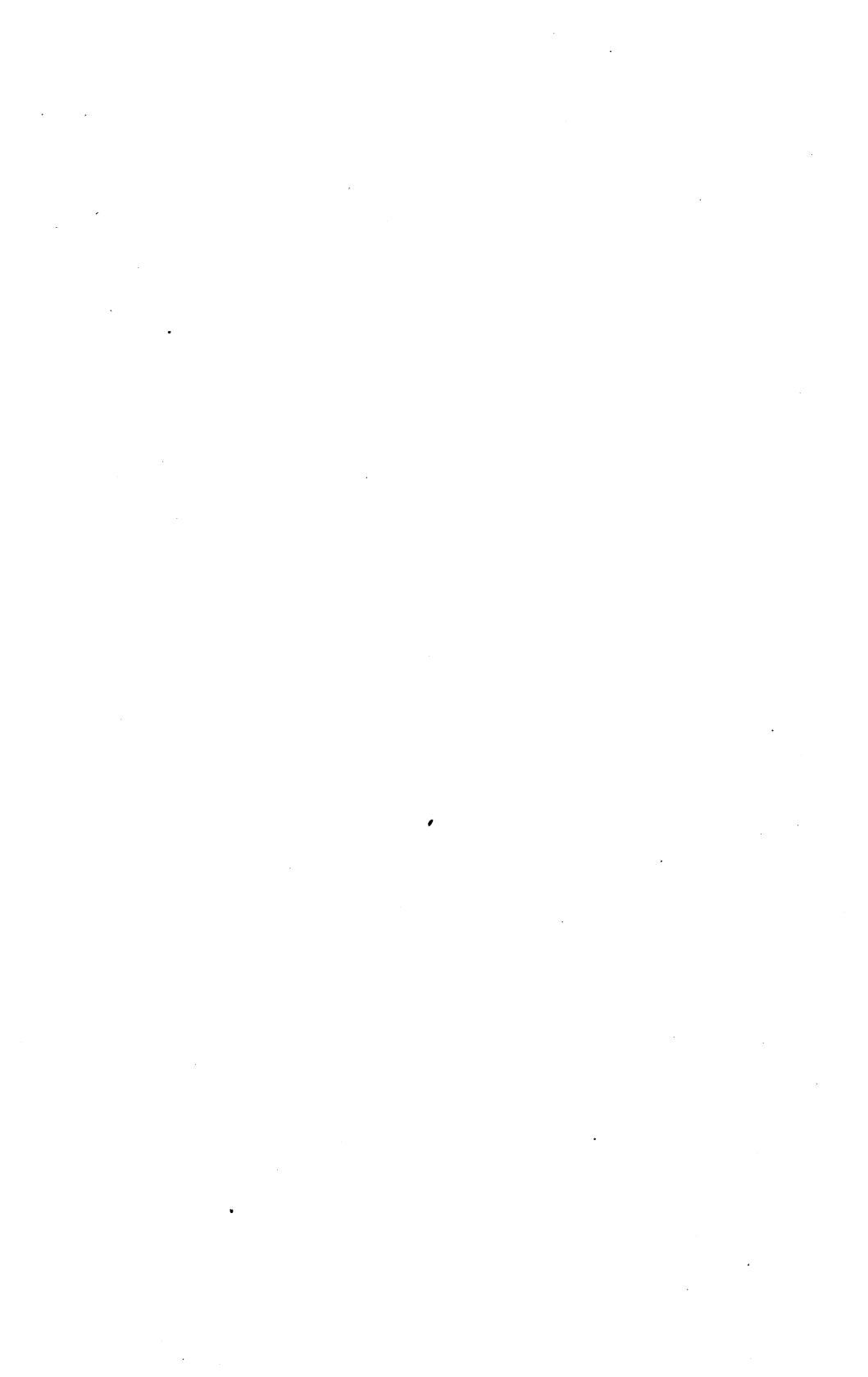
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LETTER OF TRANSMITTAL.

U. S. DEPARTMENT OF AGRICULTURE,
OFFICE OF EXPERIMENT STATIONS,
Washington, D. C., October 3, 1905.

SIR: I have the honor to transmit herewith, and to recommend for publication as a Farmers' Bulletin, a summary of data on the feeding, management, and uses of guinea fowl, prepared by C. F. Langworthy, of this Office, in accordance with instructions given by the Director. In the United States there is a growing market for guinea fowl as table birds, and therefore it has seemed desirable to summarize the available data regarding them. At some of the American experiment stations studies have been made of the composition of the flesh and eggs of this class of poultry, but so far as can be learned no tests have been made of their food requirements, the comparative value of different rations, or the best systems of care and management.

Standard poultry books and files of poultry journals contain some references to guinea fowl and methods of feeding and caring for them, but the information thus available is meager and widely scattered. In the present bulletin such data have been summarized, as well as information secured by correspondence and in other ways. The discussions of the preparation of guinea fowl and guinea eggs for the table, and the character and quality of the cooked products are in considerable part based on experiments especially undertaken for this bulletin by teachers of domestic science and others.

The list of those who have supplied data is large, and all are deserving of thanks, as the information received has been most useful.

Respectfully,

A. C. TRUE,
Director.

Hon. JAMES WILSON,
Secretary of Agriculture.

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THE GUINEA FOWL AND ITS USE AS FOOD.

INTRODUCTION.

Guinea fowl, sometimes called guinea keets, belong to the natural order of Gallinaceæ, which includes also our common fowl. As the English name implies, the birds are probably natives of the west coast of Africa, although some authorities urge that they are descended from a variety common in Abyssinia. They were raised as table birds by the ancient Greeks and Romans, but disappeared from Europe during the dark ages, and were reintroduced later, it is said, from Jamaica and Cuba. They were evidently taken to the West Indies by the early European settlers and have been abundant in several of the islands ever since. In Jamaica, in some of the lesser Antilles, and also in the Cape Verde Islands they have gone back to their wild state and are hunted in their season as game birds. They are also well known as game birds in England, where large flocks are sometimes kept in game preserves. Their quarrelsome nature, however, makes them the enemies of other birds, especially of pheasants, and the two kinds can not be kept together. On the Continent they are more common and more completely domesticated, and are prized as table birds. In Austria especially there are large establishments devoted to their breeding, and guinea fowl are also raised for market in considerable numbers in France and Germany.

In the United States very few breeders, if any, raise them in large numbers. They are much more common in the Southern States than in the North. A pair is occasionally seen wandering about New England farmyards—but less commonly now than a few years ago—and they are raised in small numbers by many poultry men in the Middle West, as is shown by the fact that the market supply comes in considerable part from that region. The chief objections to them seem to be their harsh cry, which is often particularly troublesome at night, and their wandering and quarrelsome habits. While their cry is undeniably disagreeable, it does not seem that it is very much worse than those of ducks and geese, and it is considered an argument in the birds'

favor by many farmers, as it gives warning of marauders in the poultry yard. Similarly, their pugnacious disposition, while it occasionally leads to trouble with other poultry, also makes them show fight against hawks and other common enemies, so that guinea fowl are sometimes kept as protectors of the more peaceable birds.

There is no denying that if left to themselves guinea fowl are inclined to stray far afield and especially to "steal" their nests in out-of-the-way places; but, as will be shown later, they can with care be trained into more domestic habits. If they are allowed to range, their feed costs little, since they will live almost entirely on insects, seeds, etc. Both eggs and flesh are considered delicious eating in Europe, and, although many persons in this country rate them below chicken, and others have never tasted them, epicures consider them most excellent, ranking them with game birds. The demand for them in our city markets is constantly increasing, and it seems probable that they will soon be a recognized source of profit to the poultry man, fit to be bred, fed, and marketed as carefully as chickens, turkeys, ducks, and geese, and not merely as curiosities.

VARIETIES OF GUINEA FOWL.

There are several varieties of wild birds known as guinea fowl in Africa, some of which have very beautiful plumage. Among the most striking is the vulturine royal guinea fowl, which is seldom raised in captivity, though occasionally seen in collections of birds. The head and upper part of the throat are destitute of feathers. The nape of the neck is covered with short velvet-like brown down, and the lower part has long lanceolate flowing feathers, showing a broad stripe of white down the center, bordered with a line of dull black with small white dots, and margined with blue. The breast and sides of the abdomen are of a beautiful metallic blue, the center of the abdomen black, the flanks dull pink, with numerous spots of white surrounded by circles of black; the bill is brownish and the feet brown.

The true guinea fowl, Numidæ, include six species with naked heads covered on the top with a more or less elevated bony helmet, a pair of wattles at the angles of the gape, and black, white-spotted plumage. The common species (*Numida meleagris*), the ancestor of the ordinary domesticated birds, may be distinguished by its having a wide vinous gray collar covering the upper part of the mantle and chest. The bare skin on the sides of the face, neck, and chin, and also the wattles are red, and the rest of the neck a dark bluish color. The black, almost hair-like, feathers on the neck are continuous in a thin line nearly to the base of the helmet. The white spots on the mantle are smaller and less uniformly round than on the other species,

and the wattles at the angles of the gape are wider. The helmet is horn-colored and the legs and the feet are a dusky red. The body, wing, and tail feathers all show the same markings, round white dots on a dark ground. In immature specimens many of the white spots are represented by bars and markings of white, this being especially true of the feathers on the wings, tail, middle of the back, and breast.

Domesticated birds of the ordinary type (fig. 1) appear to have been developed from a single variety or from several closely related varieties, and have undergone surprisingly little change either in appearance or in habits during many generations of captivity. There are not many varieties, and the so-called "pearl" guinea fowl is by far the most common. It has steel or purplish gray plumage regularly

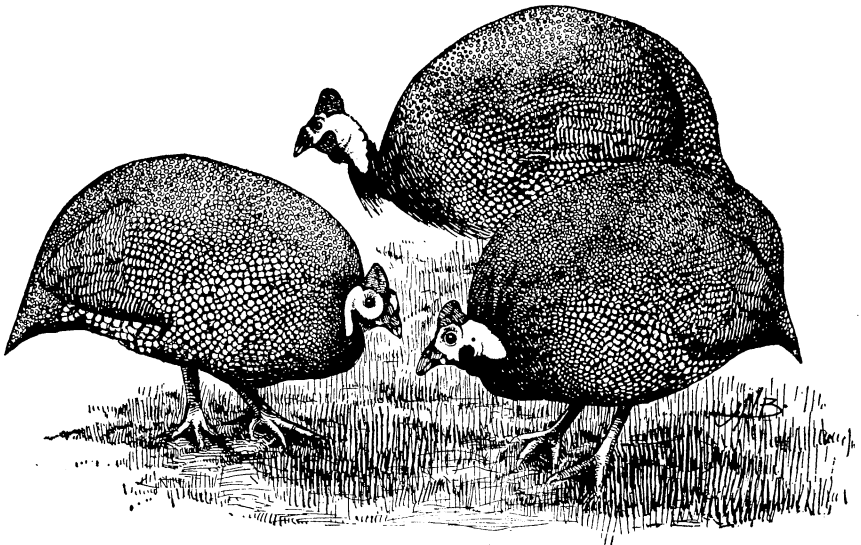


FIG. 1.—Common guinea fowl.

dotted or "pearled" with white (whence its name), and it is so handsome that the feathers are frequently used for ornamental purposes. The birds have bright coral-red wattles. The ears and the sides of the head are ordinarily white and are not unlike kid in appearance. Pure white guinea fowl are not uncommon and are sometimes considered a distinct type developed by domestication. It is probable, however, that they are albinos of the common variety. Other sports appear with white plumage dotted with black. By crossing these and the albinos with the regulation type, birds with variously mixed plumage have been obtained. Crosses between guinea fowl and other poultry, particularly chickens, and less commonly turkeys, are not unknown, such cross-bred birds being without exception sterile.

Of the common classes of domesticated guinea fowl some have a peculiar bony helmet on the top of the head, while with others this is replaced by a crest of feathers varying in size and shape in different types. In all varieties the male and female birds are very much alike in appearance. The males, however, may generally be distinguished by their larger comb and wattles and coarser heads and by a peculiar habit of "walking on tiptoes" when excited. The cries of the two sexes differ decidedly; that of the male is simply a shriek, while the female has a peculiar call, often thought to resemble "buckwheat, buckwheat." When angry they make a hissing cry.

It is stated that the most general change which domestication seems to have produced in the appearance of guinea fowl is in the color of the legs—whereas in the wild varieties the legs are almost uniformly dull gray or brown, in the domestic they are usually a bright reddish yellow or orange.

The young guinea chicks are very attractive, those of the ordinary variety resembling young quail. They are brown in color, the under part of the body being lighter than the rest. The back is marked and striped with yellow, and the bill and legs are red. The first wing feathers are brown, yellow, or reddish brown. When about two months old, the ordinary feathers replace the downy plumage, and a few months later the peculiar crest or comb and wattles make their appearance. At this period the birds are especially delicate and difficult to handle.

There is as yet no standard of perfection set for guinea fowl in this country, the birds not being recognized by the American Poultry Association. Here and there are poultry fanciers who make a specialty of guinea fowls, and the points insisted upon by the few who breed them are good size and uniformity in color. The latter should be gray, regularly marked with white, or the pure white of the albino type. Other sports and crosses between these two are as yet mainly curiosities, although in the absence of a recognized standard each breeder is at liberty to set up one to suit himself.

HABITS AND CARE.

In the wild state guinea fowl show a preference for forests and wooded valleys, and congregate in large flocks. Under less favorable conditions the flocks are much smaller and the birds range over large areas. In their natural habitat the food varies with the season. Thus in the spring they feed upon insects, and later, in summer, also upon leaves and shoots, buds, berries, and seeds of all sorts. In winter they seek cultivated fields and the foods which they afford.

As has already been indicated, the domesticated birds have retained a surprising number of their wild traits. If allowed to have liberty

they wander over long distances, fly almost as well as if they had never known captivity, and prefer roosting high in trees to spending the night under cover. They make their nests, which are hardly more than a few twigs put over a hollow in the ground, in some secluded spot at a distance from habitations. They will desert a nest if they see a human being near it; and if it or the eggs in it are touched by the hand in their absence they are said to leave it at once. For this reason it is quite commonly believed that the eggs must be removed with a stick or a long-handled spoon. Some who are familiar with guinea fowl insist that care must also be taken to leave several nest eggs, as the hens will not usually lay again in a nest containing only one or two; one breeder considers five the smallest number which it is safe to leave.

When secluded nests are provided, however, guinea hens will generally lay in the poultry house, and if they have high perches and are fed regularly at night they will also roost at home.

In their wild state guinea fowl mate in pairs, and many, particularly earlier, writers on the subject recommend mating them thus in captivity. However, it is now customary to allow several hens to a cock. A prominent American breeder recommends three or four hens to one male if they are kept for breeding purposes. If the proportion of hens is too large the eggs tend to be infertile. If the birds are kept mainly to supply eggs for the table more hens may be allowed. If permitted to range, several cocks and their attendant hens will flock together and several hens will use the same nest, in which they pile a large number of eggs, sometimes as many as 30 or 40.

Their breeding season begins about the same time as that of wild birds—that is, in April or May, according to the latitude—and they usually continue laying throughout the summer. Breeders formerly expected 50 or 60 eggs a year from each hen, but the varieties have improved so much that 100 is now considered a reasonable number.

Though, generally speaking, the guinea hens lay only in summer, it is possible and indeed probable that they can be bred to lay in winter, which would be an advantage in raising early broilers for the market. It is reasonable to believe that modifications in methods of handling would induce winter laying, as this factor is known to have a marked effect with ordinary poultry.

Guinea hens make poor sitters, as they are restless and inclined to range when they should be on the nest. Sixteen eggs is said to be the proper number for a sitting, but as soon as two or three chicks are hatched the hen is likely to go off with them even if the other eggs are pipped and would hatch after a few hours more of brooding. For this reason breeders rarely leave the eggs to the mother hens when they become broody except late in the season. Incubators appear to

have been used but little for guinea hens' eggs, though there is no reason to suppose they would not give satisfactory results. The usual practice is to put the eggs under a common hen, and she can easily cover 15. A German writer considers that turkey hens are best for hatching guinea eggs, though other poultry will also answer the purpose. He states that a turkey will cover 18 eggs. Guinea eggs are usually very fertile and the proportion which hatches is large.

The period of incubation is about a week longer than that of common chicks, and probably lasts twenty-eight days, although some authorities say twenty-six and still others thirty. A Russian investigator has made extended studies of the changes taking place in guinea hens' eggs during incubation, and has discovered some interesting biological differences between their development and that of common hens' eggs.

Newly hatched guinea chicks are hardly more than half as large as chickens, but run about with amazing agility almost as soon as they leave the shell. So inclined are they to use their legs and wings immediately that one authority recommends placing the nests in large boxes covered with netting. In any case they should be kept in close confinement for five days or a week or they will get lost. After that they may be allowed to run with the hen when the weather is good, and, if they are to range, may have full liberty when two weeks old. They are inclined to keep close to the brood mother for several months, and for this reason their natural ranging instincts can be considerably checked by giving them to a hen of home-keeping habits.

When the guinea hens are used to hatch the eggs and are not confined, both mother and chicks sometimes wander away and are lost unless closely watched.

In spite of their activity and the fact that they grow very rapidly, the little chicks, like young turkeys, are very sensitive to cold and dampness, and in northern climates it is safest to have them hatched not later than July, so that they may be well-grown before cold weather sets in. When allowed to range the old birds are very hardy, but if they are confined they also suffer from the same unfavorable weather conditions.

It can not be learned that there are any diseases peculiar to guinea fowl, and ordinarily they are very healthy. However, they are susceptible to at least some of the common poultry diseases. In the neighborhood of Washington, D. C., a considerable number of the guinea chicks raised by a poultry fancier of experience died, apparently from enterohepatitis or "blackhead." So far as can be learned no special studies of the diseases of guinea fowl have been made.

None of the American experiment stations have reported feeding tests or other work with guinea fowl, and few data on this topic have been found in the reports of foreign investigators. Indeed, so little

have guinea fowl been studied that no special rations have been proposed for them. Some information has, however, been gained from poultry raisers and from other sources.

Wheat, corn, barley, oats, buckwheat, millet, and hemp seed are all recommended as suitable grains for guinea hens, and it seems probable that, as is the case with other classes of poultry, a mixture would prove more satisfactory than any single grain. In general, it may be said that they seem to require very much the same rations as chickens of corresponding ages. According to one authority, they should be fed the same as turkeys. Corn and other grains, with green feed and grit, are the staples, and, of course, pure water should always be supplied. As usually kept, the guinea fowl eat with the chickens and apparently thrive on any of the usual mixed rations. For finishing for market a ration containing a large proportion of carbohydrates supplied in whole and ground grain is desirable, as is the case with other kinds of poultry. The fattening period should not be over one or two weeks, as overfat guinea fowl are not desirable. There are apparently no reliable data regarding the amount of exercise which should be allowed during fattening.

The little guinea chicks should be fed almost immediately after hatching. They also need food oftener than ordinary chicks, because their crops are much smaller. Indeed, a fast of several hours is said to be fatal to the young birds. One writer on the subject suggests a diet of chopped eggs, oatmeal, canary seed, and onions for the first two weeks. Another maintains that if bred in confinement guinea fowl should have rather more animal food than other poultry, because their natural food on the range contains such large quantities of insects. Discussing guinea raising in Germany, Doctor Zürn states that the larvæ of ants constitute the most satisfactory feed for newly-hatched guineas, and that for several weeks they may be fed as occasion offers with good results. The newly-hatched chicks, in his opinion, should be fed a mixture of bread crumbs and finely chopped hard-boiled eggs, or cooked lean meat, especially beef heart. Cottage cheese (sour-milk curd) may also form a part of the mixture. When four or five days old, the chicks should be fed some green feed (lettuce, cress, etc.), which should be finely chopped. Bread and milk is also readily eaten, and after the chicks are a week old soaked millet seed is a satisfactory feed. After a time dry millet should be fed, and as the chicks grow older the ordinary ration of the full-grown birds can gradually replace these special feeds.

Some of the feeds mentioned above are not commonly given to poultry in the United States, but the data quoted will serve to show the character of feeds which are considered satisfactory, namely, an abundance of animal feed shortly after hatching combined with some

easily digested cereal, and a little later some green feed, then soft grain, and gradually the ordinary ration of full-grown poultry.

If they are allowed to wander, the adult birds may be trusted to find the bulk of their food; but of course they must be fed regularly in the poultry yard if they are expected to roost there. Guinea fowl are very fond of green feed and when allowed to range may do some damage to gardens unless watched, a fault, it is only fair to say, which is not confined to this class of poultry. So great is their appetite for insects that a few guinea fowl will make a noticeable difference in the number about a farm, and in thus helping to exterminate pests, if in no other way, they more than repay any trouble they may give by their hoarse cry and wandering habits. Guinea fowl, when allowed to range, also eat a very large number of weed seeds, and this, too, must be placed to their credit.

Experienced breeders consider that in beginning to raise guinea fowl it is better, if possible, to buy eggs for a common hen to hatch than to get adult birds. Their instinct for homing is as strong as that for ranging and they take very unwillingly to a change of dwelling. If adult birds are obtained, they should be kept in close confinement for some days. If guinea fowl are to be bred on a large scale, it would probably be wise to keep them in partial confinement, at least when young, and to encourage them in every way to roost and nest in the poultry yard. When they are to be kept in yards or runs, the latter must be completely inclosed with fine wire netting, for they can fly over the highest fence and the chicks can slip through 1-inch meshes.

Since the eggs are best hatched early in the season, it is advisable to collect all but enough for nest eggs up to the first of July and give them to common hens to hatch. The eggs laid during July and early August would doubtless bring a fair price in a fancy market in a region where guinea eggs are known and appreciated, while the guinea hens should be allowed to hatch and rear the later ones. As with other poultry the breeding stock for the following year should be selected in the autumn, and the remaining birds marketed as advantageously as possible.

In Europe guinea fowl are caponized and specially fed in the same way as common fowl, but so far as could be learned the practice is not followed in the United States.

MARKETING GUINEA FOWL.

From 5 to 8 months is the usual age for marketing guinea fowls. There is also quite a demand for very young chicks, weighing from half a pound to a pound, for broilers. In such young birds the flesh is very tender and resembles that of partridge or quail in flavor.

When 5 to 10 months old, the flesh is said by some to closely resemble that of pheasants, being especially "gamey" in flavor if the birds are allowed to range. Others consider it dry and tasteless, and it seems certain that old birds are very apt to be decidedly tough. An adult bird weighs from 3 to 4 pounds. Although guinea fowl belong to the same order as common fowl and the flesh on the breast is lighter in color than in other parts of the body, the meat throughout is darker than that of common fowl and has shorter fibers. Its color is said to vary with different varieties, that of white-feathered birds being quite light in color. Some connoisseurs consider that the finest flavored meat is obtained from crosses between the pearl and the white strain.

On the Continent of Europe guinea fowl are considered very delicious table birds and in England they are highly prized as substitutes for game, sometimes figuring on menus as "American pheasant."

They have always been eaten to a certain extent in the United States, especially in the South, and have been much relished by those who were discriminating in their tastes, but until recently they have been commonly said to be rather inferior to chickens, perhaps because of the darker color of the meat or because the majority of persons have never had their attention called to their good points. The demand for them in city markets has recently increased considerably, perhaps quite largely on account of the more stringent game laws now in force. Their flavor resembles in so many ways that of game birds that guinea fowl furnish an excellent substitute for game. They seem as yet to be little bought for private families except by the few who have learned to appreciate their excellent qualities; but some idea of their importance in club and restaurant menus may be gathered from the fact that in a fashionable New York hotel 3,000 were used between the first of January and the middle of April, 1905.

The opinions regarding the palatability of guinea fowl have been confirmed by a number of tests which were made by teachers of domestic science and others with the special purpose of securing data for this bulletin. When well cooked the birds are attractive in appearance and the flesh, particularly of young birds, is tender and of especially fine flavor. The numerous ways in which they may be readily cooked is an additional advantage in considering the possibilities of this class of poultry for the table.

The general method of preparing guinea fowl for market is much the same as that employed for other poultry. In Europe they are commonly fattened before killing, and the practice is desirable, although it is little followed in this country. The birds fatten readily, and care must be taken not to market them in an overfat condition (see p. 13).

The best method of killing is to cut the artery in the roof of the mouth, as is done with chickens, and hang the bird, head down, until

the blood has ceased to flow. Especial care should be taken to chill the birds thoroughly before shipping, as the flesh decomposes readily if the animal heat is left in. Guinea fowl, so far as can be learned, are usually sold undrawn, and are commonly marketed unplucked or with the breast feathers removed (fig. 2), although sometimes they are wholly plucked. As they are usually classed with game, which is sold



FIG. 2.—Guinea fowl ready for market.

with the feathers on, and as their plumage is very handsome, they undoubtedly attract more attention and command a better price if unplucked. The feathers are easy to remove, and the undesirable practice of dipping the bird in hot water to loosen them is even less excusable than with most other kinds of poultry. Their plumage is

so thick that plucked guinea fowl look much smaller than would be expected.

The marks of age in guinea fowl are similar to those in common fowl. A flexible breast bone, soft, tender feet, and short sharp claws indicate a young bird.

In young birds, the outer wing feathers have pointed ends, and with older birds rounded ends. It is also claimed that age may be estimated by the peculiar helmet on the head of some varieties of guineas. This makes its appearance when the birds are 2 months old, and at the end of a year has attained its full size. The writers quoted state further that until the birds are 15 to 18 months old the helmet is nearly black. It then turns lead color, and becomes gradually lighter in color as the birds grow older.

It should be remembered that the flesh is darker than that of ordinary chickens, and that a purplish-looking breast, which would suggest staleness in the latter, is to be expected in guinea fowl.

The young birds for "broilers" begin to reach the market in the North late in the summer; the larger birds are killed throughout the autumn and early winter, and by means of cold storage the season is continued until spring. Since practically no breeders make a specialty of guinea fowl for the market, the birds are supplied in small numbers by poulterers who keep a few with their other kinds. The New York dealers get their fresh guinea fowl largely from New Jersey. The wholesale meat dealers in Chicago buy up the birds as they find them, here and there, on farms, paying for them by the head rather than by weight, as with other varieties. The birds are put into cold storage until enough are collected for a shipment. Sometimes they are sold in our eastern markets, but often they are sent to England, where there is always a ready sale for them.

Any article is of value only in so far as a demand exists for it. Sweetbreads in many country markets could recently and doubtless can still be had almost for the asking. However, in city markets where there is a demand for them, the price is always high. Much the same condition is found with squabs. A few pigeons have very commonly been raised on many farms, yet the young birds have had no local market value and have seldom appeared on the tables of those who raised them. At the same time, squabs have been in demand in city markets and have brought such good prices that squab raising has developed into a special business. With guinea fowl the case is very similar. In regions where they are grown in a limited way with other poultry, more as curiosities than for any special purpose, they are quite generally disregarded as table birds, though here and there their merits have been recognized and housekeepers have taken advantage

of the low prices consequent upon the limited demand. However, in towns where the total number of persons who are on the lookout for delicacies is large, guinea fowl have been appreciated, and they meet with a ready sale at good prices.

It is true of guinea fowl as of other classes of poultry that care and cleanliness in handling and dressing are of great importance, as is also an attractive manner of marketing, especially in supplying the demands of fancy trade. Many poultry raisers recognize the fact that well-dressed chickens, packed in suitable cases neatly lined with white paper, bring prices which could not be obtained for similar birds sent to market in a careless and unattractive way. With guinea fowl these points are of especial importance.

It is in supplying the trade which is willing to pay good prices for a fancy article that special profits must be sought. If the poultry raiser simply sells a few at a time in the usual way and for the same rates as other poultry, there will not be any great advantage. If, on the other hand, the producer supplies carefully fattened and dressed birds and can arrange to dispose of them to some dealer in high-grade goods, or to a consumer of large quantities—for instance a hotel or restaurant—it seems fair to say that there are opportunities for satisfactory profits, especially when it is remembered that the cost of raising guinea fowl is at least as low as with other classes of poultry and the prices which they bring in fancy markets are high.

It is obvious, therefore, that the conditions here are much the same as with many other special lines which are open to the farmer. It is not enough to produce a good article. It must be advantageously marketed as well. As an industry develops, market conditions change and it is not improbable that in time guinea fowls will become more staple articles and that prices will be more uniform than at present. Should such be the case, raising them for market would then present much the same problems as are now presented by the more staple lines of poultry production. At present a special market must be sought to secure the greatest profits.

PRICE OF GUINEA FOWL.

In Europe guinea fowl sell for good prices. It is said on good authority that a poultry raiser near Leipzig has for years made a specialty of these birds and has sold his product for an average price of 75 cents each. The same writer states that in Paris birds are sold in summer for 80 cents and in winter for 60 cents each, while the eggs bring twice as much as hens' eggs. In the United States the price of guinea fowl varies greatly with the season, the locality, and the individual market, but has in general advanced considerably during recent

years. Whereas a pair formerly sold in New York at 50 to 90 cents, they now bring from 90 cents to \$1.25 or more.

Guinea fowl are not separately included in the official market reports, and consequently it is difficult to obtain definite information regarding their price. Private inquiry among reliable dealers in Boston, New York, Rochester, and Philadelphia indicates that in northeastern cities the average retail price for a pair weighing 2 or 3 pounds each is probably about \$1.25 in the autumn and early winter; while younger birds earlier in the season and older birds later often bring \$1.50 per pair or even more. In the South, where all poultry is cheaper, they cost less. Information received from Montgomery, Ala., gives 30 to 35 cents each as an ordinary retail price. In Washington, D. C., a common price in summer is 25 cents per pound. The wholesale Chicago buyers, already referred to, pay on an average about 25 cents per bird. From these rather desultory statements it would seem that guinea fowl are sold to the consumer for prices not unlike those paid for good young chickens in city markets. In the country, especially in the Southern States, prices are usually lower than in the towns.

COOKING OF GUINEA FOWL.

Heretofore guinea fowl have been so little eaten in this country that most American cookbooks give no directions for cooking them. In general, it may be said that they may be prepared for the table in practically the same way as other poultry of corresponding age and size. Very young birds are best broiled and should be trussed and served like chickens. The older birds are sometimes roasted, boiled, fricasseed, or cooked with a little onion and bacon in a casserole. A homely but excellent southern substitute for the latter method is obtained by covering the bottom of a skillet with sliced onions slightly browned, laying on it the guinea fowl nicely cut as for a fricassee, putting thin strips of bacon over the meat, adding a little water, and finally closing the skillet tightly, by means of paper tied over the top, and cooking in the oven until well done. Another favorite way is to half roast the birds and then finish the cooking by broiling. The giblets may be used in gravy or otherwise like those of chickens. Boiled cereals like samp or hominy are often served with guinea fowl in the place of potatoes.^a

Guinea fowl and broilers may also be cooked in the same way as game birds, and appear quite commonly on hotel and restaurant menus prepared in such ways.

^a For recipes for cooking guinea fowl see Boston Cooking School Mag., 9 (1904-5), pp. 25, 421; 10 (1905-6), p. 85.

GUINEA HENS' EGGS.

Although the eggs of guinea fowl, like the flesh, have always been eaten more or less in this country, they have as yet had no special market value, and are, indeed, commonly regarded as inferior to hen's eggs, owing to their small size. European writers and epicures, on the other hand, consider them a great delicacy, with a rich flavor resembling that of the much-prized plovers' eggs. The delicate flavor is especially noticeable in the yolk, and either hard or soft boiled the eggs are very palatable. They are regarded by many as especially delicious when eaten cold with aspic jelly or other relish. Should they come to be appreciated in the United States their price would undoubtedly rise, and they might become a source of considerable profit, since the hens are excellent layers.

With Southern cooks the belief is quite generally held that guinea eggs are superior for cake making and similar purposes, since the

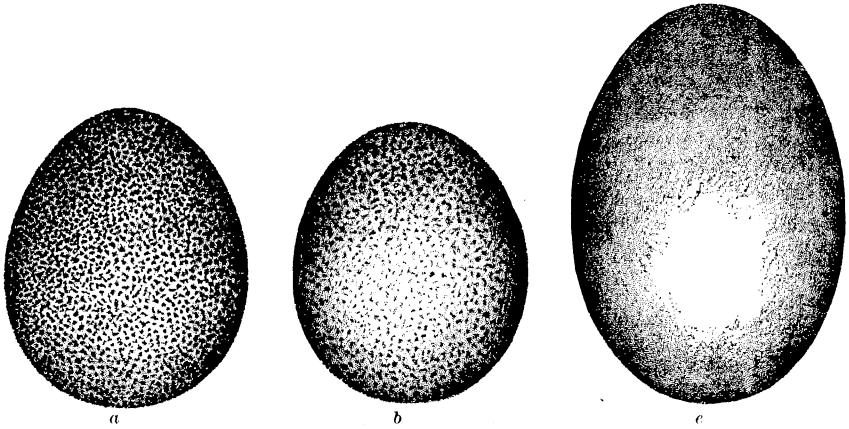


FIG. 3.—Guinea eggs (*a* and *b*) and a hen's egg (*c*) compared.

white is thought to be lighter when whipped than that of hens' eggs. The eggs (fig. 3) are sometimes white, though more commonly light brown in color, usually speckled with a darker shade. They measure on an average 1.9 inches by 1.5 inches, are rather pointed at one end, and weigh about 1.4 ounces each, or 17 ounces to the dozen. On an average hens' eggs are 2.4 inches in length and 1.7 inches in diameter, and weigh about 2 ounces each, or 8 eggs to the pound, or 1.5 pounds to the dozen. The shells of guinea hens' eggs are so thick and often so dark that there is no simple way of testing the freshness by candling, and the buyer is forced to depend upon his dealer. If marketed in any considerable number, some of the egg-testing methods depending upon differences in the specific gravity of fresh and old eggs could doubtless be adapted to guinea eggs.

COMPOSITION AND FOOD VALUE OF THE FLESH AND EGGS OF GUINEA FOWL.

As far as can be learned, almost no studies have been made to ascertain the value of the flesh and eggs of guinea fowl as food. An investigation of the composition of guinea eggs and eggs of other domestic poultry was carried on at the Maine Experiment Station, and similar studies of the flesh were made at the Connecticut Storrs Experiment Station. The results of these analyses are given in the following table, in which similar analyses of other kinds of poultry and eggs are included for the sake of comparison:

Composition of guinea eggs and guinea flesh as compared with other eggs and poultry.^a

	Refuse.	Water.	Protein.	Fat.	Ash.	Fuel value per pound.
FLESH.						
Guinea hen:	<i>Per ct.</i>	<i>Per ct.</i>	<i>Per ct.</i>	<i>Per ct.</i>	<i>Per ct.</i>	<i>Calories.</i>
As purchased	16.4	57.7	19.4	5.4	1.1	730
Edible portion		69.1	23.1	6.5	1.3	870
Meat, not including giblets.....		68.9	23.4	6.5	1.3	865
Giblets.....		69.9	20.8	7.1	1.3	855
Common fowl, young:						
As purchased	18.8	55.5	17.8	7.2	0.9	765
Edible portion		68.4	21.9	8.9	1.1	945
Meat, not including giblets.....		66.9	22.6	10.1	1.1	1,000
Dark meat		70.1	20.8	8.2	1.2	850
Light meat		70.3	21.9	7.4	1.1	835
Giblets		71.0	19.8	6.4	1.3	810
Common fowl, broiler:						
As purchased	29.1	51.2	15.5	3.3	0.8	540
Edible portion		69.7	20.7	8.3	1.1	890
Meat, not including giblets.....		69.2	21.1	8.8	1.1	880
Giblets.....		72.8	18.7	6.1	1.3	730
Turkey:						
As purchased	14.3	49.2	19.0	16.2	1.0	1,185
Edible portion		57.4	22.2	18.9	1.2	1,385
Dark meat		57.0	21.4	20.6	1.1	1,435
Light meat		63.9	25.7	9.4	1.3	1,065
Giblets		56.7	17.7	23.5	1.2	1,480
Duck:						
As purchased	15.9	51.4	15.4	16.0	1.1	1,085
Edible portion		61.1	18.3	19.0	1.3	1,290
Meat, not including breast or giblets.....		55.5	17.4	26.1	1.0	1,540
Breast.....		73.9	22.3	2.3	1.3	685
Giblets.....		73.2	17.9	5.0	1.8	720
Goose:						
As purchased	11.1	48.0	14.8	25.5	1.0	1,475
Edible portion		54.0	16.6	28.7	1.1	1,660
Meat, not including giblets.....		51.8	16.2	31.5	1.0	1,755
Giblets.....		70.0	20.1	8.2	1.7	910
EGGS.						
Guinea fowl:						
Whole egg as purchased	16.9	60.5	11.9	9.9	.8	640
Whole egg, edible portion		72.8	13.5	12.0	.9	755
White.....		86.6	11.6	.03	.8	215
Yolk.....		49.7	16.7	31.8	1.2	1,655
Hen:						
Whole egg as purchased	11.2	65.5	11.9	9.3	.9	635
Whole egg, edible portion		73.7	13.4	10.5	1.0	720
White.....		86.2	12.3	.2	.6	250
Yolk.....		49.5	15.7	33.3	1.1	1,705
Duck:						
Whole egg as purchased	13.7	60.8	12.1	12.5	.8	750
Whole egg, edible portion		70.5	13.3	14.5	1.0	860
White.....		87.0	11.1	.03	.8	210
Yolk.....		45.8	16.8	36.2	1.2	1,840

^a The proportion of carbohydrates is so small in flesh and eggs that it is not usually estimated in food analyses.

Composition of guinea eggs and guinea flesh as compared with other eggs and poultry—
Continued.

	Refuse.	Water.	Protein.	Fat.	Ash.	Fuel value per pound.
EGGS—continued.						
Turkey:	<i>Per ct.</i>	<i>Per ct.</i>	<i>Per ct.</i>	<i>Per ct.</i>	<i>Per ct.</i>	<i>Calories.</i>
Whole egg as purchased	13.8	63.5	12.2	9.7	.8	635
Whole egg, edible portion		73.7	13.4	11.2	.9	720
White		86.7	11.5	.03	.8	215
Yolk		48.3	17.4	32.9	1.2	1,710
Plover:						
Whole egg as purchased ^a	9.6	67.3	9.7	10.6	.9	625
Whole egg, edible portion ^a		74.4	10.7	11.7	1.0	695

^a European analyses.

In discussing these figures it should be remembered that the amount of refuse (bones, tendons, and skin of meat, shells of eggs, etc.) in a given kind of food lessens its value. Although water is needed by the body it is abundantly supplied in other ways, and that found in solid food materials is considered also to dilute them or to lessen their food value, pound for pound. Of the remaining ingredients, the protein, which makes up the gluten of wheat and is the main constituent of the lean of meat, the white of eggs, etc., is especially important, as it alone can build up the tissues of the body. The fats, carbohydrates, and any excess of protein are, in a way not yet completely understood, burned in the body to yield energy for its activities and heat to keep it warm. The mineral matters, or ash, are needed in the bones and in other parts of the body.

The flesh of guinea fowl appears to have a lower proportion of refuse than that of chicken and a trifle more than that of turkey, duck, or goose. This factor, however, varies considerably with the age of the birds, the younger ones having a skeleton of relatively greater weight than older birds, and it is therefore unwise to draw very decided inference from the scanty data available. The same is in a measure true of the edible portion of poultry flesh, but it may be said in general that the flesh of guinea hen contains a relatively higher proportion of protein and a correspondingly lower amount of fat than that of chicken, turkey, etc., but the differences do not seem great enough to be very important.

So far as can be learned no studies have been made of the digestibility of guinea flesh. It seems probable that in this respect it would be much like chicken and turkey—that is, it would rank with the easily and quite thoroughly digested foods.

Whether any kind of food is truly economical or not depends partly on its cost and partly on the amount of actual digestible material which it supplies. The larger the proportion of refuse, water, and undigestible nutrients it contains the smaller will be the amount of useful

material supplied to the body for a certain sum of money. Judging by the best available data guinea fowl and chicken, at moderate prices, yield about as much actual nourishment as medium cuts of beef, mutton, and pork and are fairly economical; but at fancy prices they are directly comparable with such expensive meats as fillet of beef and French lamb chops. Of course, if they are eaten on the farm where they are raised, and especially if they have found most of their food, they are evidently an economical kind of meat. On the other hand, it must not be supposed that as sold in city markets their price is necessarily prohibitive. Families that can afford porterhouse steak and turkey can well afford guinea fowl at ordinary prices, and will find that they give a very pleasant variety in the meat list.

On an average hens' eggs contain 12 per cent shell, 30 per cent yolk, and 58 per cent white, and guinea eggs 14 per cent shell, 32 per cent yolk, and 54 per cent white. In other words, the shell is thicker and the yolk makes up a larger proportion of the total egg contents than is the case with hens' eggs.

The eggs of guinea fowl appear not to differ very greatly in composition from ordinary hens' eggs. The refuse consists entirely of the shell with the membrane lining it, and makes up a slightly larger proportion of the guinea egg than of the hen's egg. In respect to protein, the two kinds are practically alike, nor is there a noticeable difference in the amount of ash contained in each. The guinea hen's eggs contain a slightly larger proportion of fat and have a correspondingly higher fuel value per pound, but even this difference is not sufficient to be of importance. Unless further study should show differences in digestibility it is not probable that the two kinds of eggs will be found to differ appreciably in nutritive value. As regards flavor epicures consider that the advantage is with the guinea eggs.

It is true of guinea eggs as of the eggs of other domestic poultry that the yolk and white differ greatly in composition. The white contains somewhat less protein and almost twice as much water as the yolk, but is practically free from fat and has the lower ash content. The greater part of the egg fat is found in the yolk and about two-thirds of the total ash. In the case of hens' eggs lecithin, a fat-like body containing phosphorus, is a characteristic constituent of the egg yolk, and this is doubtless also the case with the guinea eggs.

CONCLUSION.

From this discussion it seems that guinea fowl might well be bred in the United States more extensively than is yet the case, either along with other poultry or in larger numbers by themselves. The varieties have been improved in recent years and there is reason to believe that

the improvement will continue and breeding them will become an increasingly important branch of the poultry industry. The birds do well with comparatively little care and require comparatively little food in addition to what they will gather if allowed to range. In spite of the half-wild habits which they retain when allowed to range, they may be trained to more domestic ways and may be readily fed and fattened like other poultry. Even when very young they are exceptionally hardy and free from disease. Although noisy and quarrelsome, these habits have their use, as they are commonly thought to give warning of hawks or other intruders in the poultry yard. Guineas eat such large numbers of insects that they are often useful in helping to destroy these pests. They also eat many wild seeds and in this way are of value.

There is already a fair demand for guinea fowl, especially in New York and other cities in the eastern United States. If, as seems probable, the demand for guinea fowl as a substitute for game or other poultry continues to increase, the birds ought to become a source of considerable profit to poultry raisers. Very young birds for broilers bring good prices early in the season in city markets, while the older ones are easily sold throughout the autumn and winter. They may be prepared for the table like ordinary fowl or like game birds.

They have very much the same food value as chicken and are as economical when bought at about the same price per pound. At moderate prices they furnish the body with about as much nourishment for a given sum as medium cuts of beef and mutton, and at higher prices correspond in value with the more expensive cuts and such poultry as turkey, green goose, etc. While they can hardly be recommended for families that have to make every penny count, they might well be more extensively eaten by the moderately well-to-do, and would furnish a most acceptable variety. Guinea eggs also are considered very choice eating, and, while they are much like hens' eggs in food value, they have a very delicate flavor and make a welcome change when obtainable. It will, without doubt, be of benefit to both breeders and buyers if, as seems probable, guinea fowl become more appreciated as table birds in this country.