about an hour after the noon meal of grain, or about 12.30 p. m., and the fowls have access to it for the remainder of the day.

Among all feed grains that are usually supplied to poultry, corn has been, and still is, popular with American poultrymen. Corn is heating and fattening, and when fed to closely-confined fowls in large quantities, fat, rather than eggs, is the usual result, and it should be balanced with meat, bone, linseed, gluten, and such feeds are are rich in nitrogenous matter, for corn is deficient in this constituent. When corn is fed to laying hens that have opportunity to take plenty of exercise, and to secure insects and green feed, much more satisfactory results are likely to be obtained than when it is fed to the same fowls closely confined. It may be fed quite largely in the cold climates during winter, but should be fed sparingly during the summer. Wheat is generally considered the safest grain to be fed alone. It is not quite so fattening as corn, still is too fattening when fed alone. This grain should be supplemented by some meat feed or skimmed milk to increase the proportion of protein. Wheat contains more protein than corn, about the same amount of carbohydrates, but less fat, and, on the whole, is considered not so valuable for fattening, but better for growth. Wheat screenings, if they are of a good grade, can frequently be purchased, and fed to advantage. Of course, there is always the danger of introducing weed seeds on the farm. "Burnt wheat" can seldom be fed advantageously, the difference in price between this and good wheat being usually too slight to warrant one in feeding it.

Oats are often fed for variety, but are not well liked unless hulled, the hulls being tough and rather indigestible. Hulled oats, on the other hand, are relished by poultry, and are excellent for producing eggs. When they can be obtained at a reasonable price, in comparison with other grains, they may be fed quite largely.

Barley does not seem to be greatly relished by hens, but may be used to give variety to the grain ration. It has a little more protein than corn, and a little less than oats.

Buckwheat is quite well liked by fowls, but is not very widely fed. It may be fed to vary the ration. Buckwheat middlings are rich in protein, and make a good mixture with corn meal.

Rye is not fed largely, and does not seem to be much relished by poultry. It is supposed to cause bowel trouble when fed freely.

MASH FEEDING.

It is the practice of a large percentage of the most successful poultrymen to feed a part of the daily grain ration ground. Most of them feed the ground grain moistened with either milk or water, although some feed it dry. A fowl's gizzard is capable of grinding all kinds of grain, but it is generally considered to be more economical to have a part of the grinding done by steam or water power. The soft-feed idea must not be overworked. A beginner often reasons that it is cheaper for the miller than for the fowl to grind the grain, but the powerful muscles of the gizzard are there to be used, and experience has shown that the balance of power of functions in the fowl's economy makes the vigorous exercise of the gizzard beneficial. When feeding moistened ground feed, have it in a comparatively dry, crumbly mash, and not a thin slop. Give what they will eat readily in fifteen or twenty minutes.

Poultrymen do not agree as to the time of day when the soft feed should be given. Some assert that it should be fed in the morning, others at noon, and still others at night. The greater proportion give the ground feed in the morning, a large number at night, and a few at noon. The number who feed at noon, however, is becoming larger. Those who give the soft feed in the morning reason that the fowls which have been on the perches during the night have largely digested the feed consumed on the day before, and consequently have comparatively empty crops and digestive organs, and, in order that the morning meal may be easily and quickly digested, the fowls should be fed only ground and moistened feed. Other careful feeders state that if a moistened mash is fed in the morning, the hen is likely to become gorged with feed early in the day, and take to the roost for the remainder of the day. It is probably more important that a part of the grain should be ground than that it should be fed at any particular time of day. In an experiment in West Virginia, the egg production was practically the same whether mash was fed in the morning or at night. The following are given as sample mashes:

100 pounds corn meal.
150 pounds ground oats.
150 pounds wheat bran.
30 pounds linseed meal.
30 pounds beef scraps.

100 pounds corn meal.
100 pounds ground oats.
100 pounds wheat bran.

100 pounds wheat bran.
100 pounds ground corn.
100 pounds ground oats.
100 pounds ground barley.

100 pounds wheat bran.
100 pounds corn meal.
75 pounds wheat middlings.
75 pounds cut clover or alfalfa.

FATTENING POULTRY.

The approach of winter, and the consequent shutting off of the outdoor feeding of the poultry, causes the farmer to realize that it takes considerable grain to feed all those cockerels that have been picking their living all fall. The farmer, therefore, decides to sell off some of the surplus cockerels. They are generally sold for what the huckster sees fit to pay, without caring whether the best price is being obtained or not. If farmers would shut up the cockerels and fatten them for a couple of weeks, a much better price could be realized.

An excellent fattening ration is composed of equal parts shorts, oat chop, and either corn meal or buckwheat chop. This is mixed with milk, if it is obtainable, and fed in a crumbly state. Give the birds just what they will eat up clean. Give this mash in the morning. At noon give grain, such as oats, wheat, buckwheat, etc.; and at night the mash is again fed, or, if corn is obtainable, it can be fed at night. Provide plenty of water, grit and green food.

Two weeks will generally be sufficient for fattening the cockerels. They may then be sold to the dealers or may be dressed and shipped to the dealers in the cities. The farmer will be well repaid for his trouble, for the extra price received for well-fattened birds will cover all expenses, and leave a good margin of profit besides. Try it.

R. H. C.

York Co., Ont.

Golden Beam.

Jersey bull, two years old. First at Bath and West of England Show, 1908.

APIARY.

HONEY ABUSED BY MANY BEEKEEPERS.

Bulletin No. 75, Part I., issued by the Bureau of Entomology of the United States Dept. of Agriculture, and entitled, "Miscellaneous Paper on Apiculture," contains much valuable and interesting information for beekeepers and dealers in honey. This Bulletin, compiled by L. O. Howland, Entomologist, and Chief of the Bureau, comprises a paper on the "Production and Care of Extracted Honey," by E. F. Phillips, Ph. D., and one on "Methods of Honey-testing for Beekeepers," by C. A. Browne, Ph. D., Chief of the Sugar Laboratory of the Bureau of Chemistry. The former paper is much the longer of the two, covering fifteen of the eighteen pages in the Bulletin.

Speaking of the abuse which honey receives at the hands of ignorant or careless producers, it says: "It is possible to treat pure high-grade extracted honey so that on examination it would be condemned or called in question. If a beekeeper treats pure honey so that its chemical composition is changed, it is no longer pure honey, and should not be sold for such. Several of the most widely circulated text-books on honey advocate very questionable practices."

Among the advantages of producing extracted honey are mentioned the facts that: "In the production of extracted honey it is much easier to control swarming, since the brood chamber is not contracted so much, and the queen has an opportunity to work to her maximum capacity. When the honey flow begins, the bees can at once commence to store honey in extracting combs, but in comb-honey production it is first necessary for the bees to secrete a considerable quantity of wax before there is room for honey in the surplus boxes or sections. The novice at extracted-honey production should be careful not to extract so much of the honey in the hive that the bees will not have enough to live on. This is a very common error until the beekeeper is taught by experience how much to extract. It is better to extract too little than too much."

Discussing method of producing extracted honey, it says: "The hive used for extracted honey production should be at least as large as 10-frames. [Presumably Langstroth frames are here meant.] The queen should have at least 10 frames for brood rearing if the beekeeper is to expect the maximum results. If the honey-flow is short, only those bees which are fully developed at the beginning of the flow are of any value in honey gathering. It is advisable to see to it that brood rearing is extensive for several weeks before a honey-flow is expected. This may be brought about by stimulative feeding, and by the cautious spreading of brood in the colony. This procedure usually pays well. A careful study of locality conditions is necessary before planning operations of this nature. Many beekeepers put only eight or nine frames in a 10-frame hive; body used as a surplus chamber, so that the bees will build thick combs.

"Beekeepers talk a great deal about 'locality differences,' and, as generally used, the term 'locality' is only an excuse for a lack of information as to the true cause of various observed facts. It is, nevertheless, true that there are scores of local differences which are great enough to bring success or failure, according as they are studied or neglected. The use of a perforated zinc queen-excluding honey-board between the brood chamber and the surplus bodies is gaining in popularity. Honey extracted from dark combs which have been used for brood is darker in color as a rule than that produced in combs which have never contained brood. It would probably do little good to advocate the use of only such combs as had not been used for brood-rearing in the production of extracted honey, but a strict regard for cleanliness would most assuredly demand it. Honey should not be taken from the hive until fully ripened. If the honey-flow is over, or the bees are hard to manipulate on account of their stinging, a bee escape is desirable. After the combs are removed from the hive they should be kept covered, so that the bees in the air will not begin to rob.

"The place where honey is extracted should be so arranged that no bees can enter it when attracted by the odor of the honey. Honey should never be extracted in the open air, except during a heavy honey-flow, when bees are not inclined to rob. The honey, before it is extracted, must be uncapped, and this should be done with a long knife, which is kept sharp, clean and warm. As the cappings of wax are cut off, some honey flows out, and, consequently, the uncapping should be done over a regular uncapping box or can. Empty combs wet with honey should not be returned to the bees while extracting is going on, for fear of inciting robbing. The greatest essential in the production of a maximum amount of extracted honey is an adequate supply of surplus combs. When nectar is gathered from flowers by the worker bees, the amount of water contained in it is very high. During the process of ripening the amount of water is very much reduced, until, in thoroughly ripened honey, it will not exceed 25%, and is generally not more than 20%. Some very ripe honeys will have as little as 12% of water in them. If more than 25% of water remains in the honey at the time of extraction it will ferment. Unripe honeys contain a larger proportion of sucrose or cane sugar, and it is probable that the longer the honey remains in the hive the less of sucrose will be found in the honey. It is the policy of most beekeepers to allow the ripening to take place in the hive by waiting until the honey is almost all or entirely capped, and this is, undoubtedly, the preferable method. By ripening in the hive, honey gets its characteristic flavor to a greater extent than is possible in evaporation outside the hive. A thorough ripening inside the hive is very much preferable. To insure this it is better to tier up the hives rather than to extract as a hive body is full.

"In all cases honey should be strained as it comes from the extractor, and subsequently skimmed until no further impurities come to the top. The thorough ripening of honey cannot be too strongly recommended. It is desirable that honeys from different sources be kept separate as far as possible, if the product is to be used for the bottling trade.

"Almost all honeys granulate or 'candy' after a certain time, and may become solid. Formerly the general public was suspicious of granulated honey, in the belief that it contained cane sugar; but, fortunately, it is now generally understood that pure honeys will