

temperature desired. With exhaust steam alone it is sometimes difficult to raise the skim-milk to a proper pasteurizing temperature.

2. Use of special pasteurizing machines.—In some cases where pasteurization of skim milk is carried out, the liquid is treated in special pieces of apparatus, such as the "continuous flow" machine of various types. Where the system of pasteurizing the whole milk is followed, the use of this type of apparatus also accomplishes the desired action on the skim-milk. Such treatment, however, is not usually so effective as the treatment of the skim-milk separately, for generally the pasteurizing of the whole milk is not carried on at so high a temperature as would be the case if the skim milk alone was heated.

Another Tribute to Alfalfa.

The Utah Experiment Station has been conducting some experiments with feeds for dairy cows and has added some more evidence to the value of alfalfa as a producer of milk and butter-fat. In summing up some of the experiments, Bulletin No. 101 says:

To what extent can forage, similar to bran in composition be substituted for bran, is a question that has been investigated by a few of the experiment stations. At the Tennessee station an experiment was carried out in which the following rations were compared: silage, wheat, bran, and cottonseed meal; and the silage, alfalfa hay and wheat bran. The following are some of the conclusions drawn from this experiment: "In substituting alfalfa hay for wheat bran it will be best to allow one and a half pounds of alfalfa to each pound of wheat bran; and the results are likely to prove more satisfactory if the alfalfa is fed in a finely chopped condition.

"These tests indicate that with alfalfa hay at \$10.00 per ton and wheat at \$20.00, the saving effected by substituting alfalfa for wheat bran would be \$2.80 for every hundred pounds of butter and 19.8 cents for every hundred pounds of milk. The farmer could thus afford to sell his milk for 19.8 cents a hundred less than he now receives, and his butter for about 22 cents as compared with 25 cents a pound.

"These experiments show why alfalfa has been frequently used as a basis for manufactured food stuffs and indicate that the farmer who can grow it makes a mistake in purchasing artificial food stuffs of which it forms a basis."

The following is taken from New Jersey Experiment Station Bulletins Nos. 161 and 148.

"A home grown ration composed of thirteen pounds of alfalfa hay and thirty pounds of corn silage, proved both practical and economical when fed in comparison with a ration in which over two-thirds of the protein was derived from wheat bran and dried brewer's grains. Milk was produced from the home grown ration for two-thirds the cost of that from the feed ration. The cost of milk per hundred was 55.9 cents against 83.9 cents for the feed ration.

"On the basis of this experiment, when mixed hay (timothy and red top) sells for \$16.00 per ton, wheat bran for \$26.00 per ton, and dried brewer's grains for \$20.00 per ton, alfalfa hay is worth \$24.52 per ton as a substitute for mixed hay, wheat bran and dried brewer's grains fed in the proportions indicated in the ration.

"A feeding experiment showed that the protein in alfalfa hay could be successfully and profitably substituted in a ration for dairy cows for that contained in wheat bran and dried brewer's grains and for this purpose is worth \$11.16 per ton, when compared with the wheat bran and dried brewer's grain at \$17.00 per ton."

From these station findings one can readily understand that great value is given alfalfa in other states in substituting it for grains of similar composition.

In Utah, bran and alfalfa hay are the foods in most common use for cows; other grains, as corn and barley, which along with alfalfa form the most ideal ration, are high priced and not used by Utah dairymen. This is not an ideal condition for most profitable operations. The dairyman by carefully conserving the manure, liquid and solid, and applying it to the soil can have for his animals a large variety of foods. Along with bran and alfalfa he can have barley, oats, roots, and a mixture of grasses, all of which can be grown at a profit if the soil is enriched, well tilled and the crop properly taken care of. To secure the greatest profit good cows and intelligent treatment are as necessary as proper foods. It matters little so long as plenty of alfalfa is given, whether or not grain is fed, when no attention is given to the quality of the cow or the care she receives.

POULTRY

Suggestions for Large Poultry Plant.

EDITOR FARMER'S ADVOCATE:

Can you furnish me with a plan, or suggestions, for a poultry house, with accommodations for 1000 head, including chickens, ducks, turkeys and geese? With arrangement for separate compartments for laying and hatching, feeding and roosting.

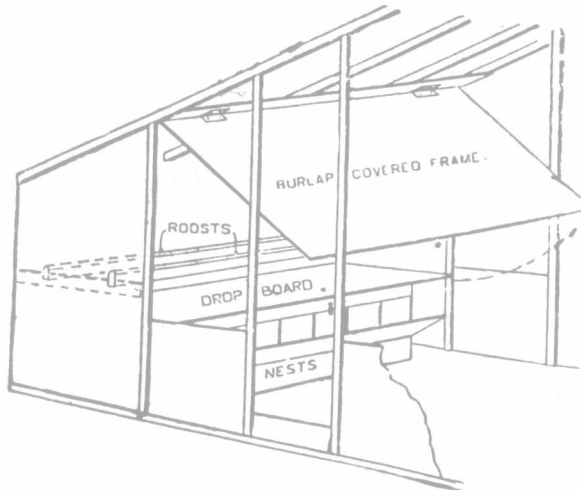
GEO. BARR.

Westbourne Mun, Man.

The above question is answered below by A. W. Foley, poultry expert of the Alberta Government:

With regard to the enquiry from your correspondent, I would understand that he proposes to undertake the poultry business on a large scale and would suggest that for this purpose he follow the colony plan of housing his poultry. Instead of making a continuous house to accommodate his 1000 birds it would be better to have five or ten houses of 200 or 100 bird capacity so that in case of disease the trouble could be more readily confined and controlled.

The colony house system is becoming much in favor in large poultry plants, as by placing the houses from 10 to 20 rods apart the expense of fencing runs is saved, as is also the necessity of partitions in the houses. A house 12x50 ft. would give ample accommodation for from 100 to 125 birds. The house could be of the shanty roof style, using 4½ foot and 8 foot studding at rear and front respectively. The nests, roosts, and drop boards can be attached to the rear walls and a burlap drop curtain used in front of the roosting



PLAN OF POULTRY HOUSE SUGGESTED BY MR. FOLEY.

quarters in cold weather. The accompanying cut gives an idea of the position of these fixtures in the house.

This style of house is economical in construction and gives sufficient floor space for scratching shed and general feeding purposes. By arranging to have the roosts removable and the drop boards hinged to the wall it would be an easy matter to convert the colony house into a suitable house for fattening crates when fattening the chicken in the fall or for any other purpose for which the house might be needed. As to arrangements for separate apartments for laying, hatching, feeding and roosting I would not recommend such, as it would add very much to the cost of construction and is not at all practical.

For hatching purposes I would recommend a separate house in using either the natural or artificial system. In making a commercial success of a plant of 1000 bird capacity the incubator becomes an absolute necessity and provision should be made for an incubating house.

A house for turkeys could be of the same style the only necessary fixtures being runs. Ducks and geese could be housed in sheds of similar design and smaller dimensions. All that would be necessary in the construction of the houses for turkeys, ducks, and geese would be to make them wind and rain proof with the necessary light.

A. W. FOLEY.

Crippled Chickens and Brooders.

EDITOR FARMER'S ADVOCATE:

In the June 19th issue of your paper I noticed a query as to the cause of so many crippled chicks in incubator hatches. It is a question which has also puzzled me; that is, taking for granted that the correspondent meant chicks which were crippled when taken out of the machine.

The answer to the question in your paper does not satisfy me, for I have observed the crippled chicks closely, and I have found that the reason they cannot stand is that either one, or, more often, both legs are either broken or out of joint, either at the knee joint or at the body. What first called my attention to this was the fact that the feet of the crippled chick were always swollen, getting more so, and getting purplish in color as he lived longer. By feeling the little limbs carefully, I found that in nearly every case either one leg or the other, or both, were broken at the knee joint, very often the end of the tiny bone sticking out, or at least plainly felt through the skin at the outside of the leg. Of one thing I am certain, and that is that it is just not the weakest chicks that are affected that way. On the contrary, it seemed the finest ones—big, lusty fellows able to live the best part of a week, despite their condition.

My first impression was that they broke their legs in their fall from the tray to the nursery drawer (my machine is a 1906 Cyphers), but at the last hatch I placed a small roll of wadding beneath the opening, so as to break the fall, but the percentage of cripples was as great as ever. Perhaps a possible explanation is that they injure their legs walking over the eggs and broken eggshells just after hatching.

The days are at last becoming warm, but the nights are still very cool. To those who are afraid of their chickens which are not in brooders getting chilled, I would advise this plan: Take a gallon earthenware jug, heat it in the oven and fill with boiling water; then roll it tightly in several thicknesses of old cloth. Place it in the coop with your chickens. They will all nestle to it as to a mother hen, and it will give a comfortable warmth for twenty-four hours.

Last year I raised four hundred healthy chicks from three incubator hatches, with no other contrivance than an old shed, where I kept a small cookstove going all day, with a few boards around the base, where the chicks nestled, and half a dozen jugs, as above described, to keep them warm at night. The floor of the shed was covered thickly with cut straw, and they scratched for their dry feed in that all day long. As soon as the warm sunny days came, I made a wire-netted yard at the south side of the shed, and kept the door open in the day time. I had no brooder at all. For the first couple of days after they hatched, I kept them in boxes with a warm jug, and did not feed; after that I let them out on the floor. I must say this for my method, that out of the three hatches I did not lose one through disease or overcrowding or cold, and the chicks had that healthy vigorous appearance that is not usually seen in brooder-raised chickens.

MRS. W. E. HOPKINS.

Turkey Inquiries from an Amateur.

EDITOR FARMER'S ADVOCATE:

I am trying to raise turkeys this year, but am rather inexperienced, and would like to have a few questions answered. Some of my little turkeys, when they were taken out of the nest, seemed to be very loose in the bowels; they had never been fed yet. I gave them all a black pepper, and their first feed was a boiled egg, with a little bread squeezed out of sweet milk. I sprinkle pepper just a little on their feed. I give them onion tops and lettuce; also sweet milk to drink. Sometimes I boil the milk, with some pepper in it.

Is curd made out of sour milk good for them, and should I give them sour milk to drink?

A neighbor of mine feeds her turkeys a proprietary poultry feed. Is it good for them?

There are no lice on them, but would it be all right to dust them occasionally with insect powder, or would sulphur be better?

My neighbor makes a cake for her turkeys out of 2 cups corn meal, 3 cups shorts, 1 teaspoon soda and enough sour milk to make a batter, and feeds them this all the time, with the poultry food sprinkled over it.

What should I do for them if they get diarrhoea?

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