

ratio than that recommended for milk cows, viz., 1:5.4.

Several different rations that proved highly satisfactory, each having been used for a season, have had in each instance a nutritive ratio of about 1:4, that is one part protein to four parts carbo-hydrates and fat. That used during the present winter consists of feeding stuffs in the following proportions: clover cut fine, 3 lbs.; pea meal, 2 lbs.; canella, 4 lbs.; bran, 1½ lbs.; mangolds, 20 lbs.; wheat, 10 lbs.; corn (fed on cob), 6 lbs.; barley, 5 lbs.; lean meat or liver, 7½ lbs., and ground green bone, 7½ lbs. The above has a nutritive ratio of 1:4.07 and has given excellent results. It is fed at the rate of 7 oz. per hen a day, to pure-bred Leghorns. Barred Rocks receive more of the lean meat and less corn than is allowed the Leghorns, on account of their susceptibility to turn their rations into fat rather than into the egg basket. This experience has been confirmed in

adapted to the object he has in view, and also how much food should be given.

It might prove interesting and instructive if other practical poultrymen would give to your readers some of the rations that have given good results for egg production, stating the conditions under which they were fed, and also the breed of fowls. Bulletin 104, issued by the O.A.C., Guelph, will enable anyone to compute the value of the grain foods and vegetables used; and for those who may not be able to obtain the information readily I may state that the percentage composition of average ground green bone is as follows: Moisture, 34.2; fats, 20.5; ash, or mineral matter, 22.8; albuminoids, 20.6; undetermined organic constituents, 1.9. The ash contains 87.4 per cent. of phosphate of lime, 11.5 per cent. carbonate of lime, and 1.1 per cent. other mineral constituents. Liver contains 20.0

will infest the bodies of fowls, both summer and winter. They are often found in cold weather, because the birds are confined more closely, and do not dust themselves as frequently as in summer. Furthermore, many people do not think of lice as affecting their fowl only during the warm season.

There are many things used to exterminate these pests; various liquids, oils and powders are used to destroy the lice. The majority of them will also kill the fowl to which they are applied, and thus the remedy is often worse than the disease. I find that keeping the houses clean and giving the fowls plenty of dust in which they may dust themselves is the best and cheapest way to keep clear of lice.

Clean the Houses.—Houses should be cleaned twice a week, and after each cleaning the drop boards should receive a thin coating of air slaked lime. In summer sprinkle with kero-

a clear profit of one dollar a head; this year I will keep a hundred, and make a hundred dollars. That is all right, keep a hundred pullets and make a hundred dollars; but for mercy sake don't try to keep a hundred, or even fifty, in the same space in which you kept only thirty before. If you crowd the fowl in this way, the chances are that you will be a hundred dollars out of pocket. There is too much of that kind of poultry-keeping, and it is the kind that does not pay. If you have room for only thirty fowls, don't try to keep more.

Utilizing Bulky Refuse.—A large amount of valuable material may be utilized if it is cooked. Pea-pods, string-beans, apples, squashes, turnips, carrots, and all peelings from the house, if well boiled, will furnish a quantity of food that is really more serviceable than too much grain. Fowl of all kinds may be kept at but little expense by such a mode of feed-

MANURING OATS ON CLAY SOIL WITH PHOSPHORIC ACID.



No Phosphoric Acid

Manured with Phosphoric Acid in form of Bohemian Thomas-Phosphate.

Manured with Phosphoric Acid in form of Albert's Thomas-Phosphate.

Manured with Phosphoric Acid in form of Bone Meal.

Equal quantities of Phosphoric Acid applied in each experiment.

The above photo and the one on the next page are taken from an illustrated lecture on "Rational Manuring of Field Plants" by Professor Paul Wagner, Ph.D., Director of the Agricultural Station at Darmstadt, Germany. This photo shows the growth of the plants tested with different forms of fertilizers containing phosphoric acid.

other cases, notably one conducted at the Hatch Experiment Station, Amherst, Mass., when it was found that a ration having a nutritive ratio of 1:4.8 produced eggs at a cost of one cent per egg less than one having a somewhat wider ratio.

In all cases an abundance of pure, fresh water, grit and lime were supplied the laying stock.

It is not proposed to lay this down as an arbitrary rule, to be followed in all cases, but simply to give a feeding standard that in my own case and in that of several others has given the best results under ordinary conditions.

The proper ration will vary with the different breeds of fowls, the condition of the birds, the prices prevailing for the different feeding stuffs, and the conditions under which they are fed. The poultryman needs to know that for some purposes he requires more protein than for others. He also should know what proportion of protein to carbo-hydrates and fat is best

per cent protein, .05 per cent. fat, and .04 per cent. carbo-hydrates.

I had hoped that an abler pen than mine might be employed in bringing this subject to the notice of progressive egg producers. If some of our successful poultrymen will come forward with the results of their experience and practice, much may be done for the advancement of the science of feeding, and the discouragement of the hap-hazard methods now prevailing.

PRACTICAL HINTS ON POULTRY.

By J. B. CARR, Belleville, Ont.

Save your Poultry.—There is no enemy to poultry that compares in its destructiveness with the common hen louse. More fowls are lost every year from this cause than from any other, and it takes some people a long time to find this out. Lice simply worry the fowls to death. When nothing is done to prevent them they

sene emulsion, and scrub the roosts once a week with pure kerosene oil. The houses should be whitewashed once a month.

Treatment of the Hen and Chicks.—For lice I use a mixture of sassafras and sweet oils; shake well, and at night, every ten days or so, with the tip of the finger put a small amount of the mixture on the top of each chick's head and on the tail bone above the vent. Then hold each one over a sheet of paper and give them an application of Lambert's "Death to Lice." Coops should receive an application of kerosene oil. In feeding young chicks be careful not to feed them too much, as that is worse than not enough, for a chick that has too much feed will not grow as well as one that is fed often and a little at a time.

Don't Crowd.—This piece of advice is meant for those who kept a flock of pullets last year and made them pay a good profit. They now have the hen fever, and will figure thus: Last year I kept thirty pullets, and they made me

ing. It furnishes a cheap and nutritious diet, promotes health and prevents the fowls becoming too fat. In feeding such material no grain is necessary except at night, when wheat and oats should be given. Season all soft food with salt. A small quantity of linseed meal mixed twice a week in the morning mash makes the plumage glossy and keeps the comb in good condition. Fowls should have plenty of bulky food if they are to be made profitable.

ABOUT PLANT FOOD.

The need of artificial manures in this country has already been demonstrated. Unfortunately the proper manner of applying them is not as yet as well understood as it should be. Ignorance in this respect frequently causes complaints to be made that commercial manures are unprofitable. Some even go so far as to say that they are simply "stimulants," and act upon the soil very much in the same way as