competent person for the position. Then again, it does seem to be a kind of an anomaly to have a great system of experimental farms existing for the benefit of the farmers of the Dominion without having an agricultural department and a competent and practical agriculturist to look after it. In all three departments, and perhaps in others, there is room for advancement and progress, and the people would uphold the government in increasing, if need be, the expenditure in order to place them on a proper footing.

There is also another side to this whole agricultural question that must not be lost sight of for a moment. The United States at the present time are making a big push to develop their export trade in food products. They have as Secretary of Agriculture a practical agriculturist who is leaving no stone unturned in the way of opening up our markets for American farm products. He has sent agents to nearly every country of Europe where there is a possibility of developing trade to find out and report upon the conditions necessary to establish a market for farm products. Secretary Wilson is indeed a hustler, and almost every day we read of some new feature adopted, or some new steps taken toward securing markets for American products, and our Government or Minister of Agriculture will have to get on a similar hustle, or Canada will go behind in the race for supremacy in the European markets.

Considering every phase of the agricultural problem then, it does seem to be a somewhat suicidal policy to reduce the appropriation for agriculture at this juncture, when there are so many ways in which extra expenditures could be made to advantage. We believe that any expenditure along such lines, as we have indicated, and which have for their object the development of our agricultural resources, and the building up of the trade with the Mother Country, will commend itself to the good judgment and common sense of the people, no matter how large it may appear. It is always better to adopt a vigorous and a progressive policy, especially when the development of the resources of a country is concerned, than to carry on an inactive, unprogressive one for the sake of economy in public expenditure.

The Poultry Industry of Canada

By THOMAS A. DUFF, Toronto, Ont.

(Continued from last week.)

TABLE USE.

For the production of poultry for table use only, I advocate the crossing of pure breeds—a first cross. The condition and tastes of the market where you sell will have much to do with the selection of the varieties to be used. In some markets the demand is for a fowl with a white skin, while in others a yellow skin is wanted. One very important thing to be borne in mind in crossing is to never cross a white-skinned variety with a yellow-skinned variety, but always use a male of the same color of skin as have the females upon which the cross is made. In advocating the crossing of fowls for table use, I may be accused of attempting to injure those who breed fancy fowl, but I submit I am doing the opposite, because two pure-bred varieties must be purchased instead of one.

Why do I advocate the crossing of two pure breeds? For the excellent reason that experiments and observation have proven to my satisfaction that cross-bred fowl mature more rapidly and are ready for the market a month earlier than pure breeds. They have a better constitution and are more vigorous.

The finest lot of dressed poultry I ever saw was to be seen neatly and attractively arranged on tables at the stand of Messrs. G. H. Waller & Son, purveyors of meat, 13 and 15 St. Lawrence market, Toronto. They were bred, fed and dressed by a young man who resides in the county of Peel, and were a credit to his skill as producer, to Messrs. Waller & Son, as vendors and to the province. They were well fatted and neatly and attractively dressed. The heads were left on, as were the feathers on the upper part of the neck and points of the wings. I spent over an hour in looking at this display. There were in all forty-one pair, made up of pure bred barred Plymouth Rocks, golden and silver Wyandottes, and first crosses of an Indian Game upon the above mentioned breeds. Mr. Waller was kind enough to weigh some of the specimens for me. The heaviest pair weighed sixteen pounds, the lightest eleven and three quarters, and in almost every case the cross-breeds outweighed the pure-breeds, and presented a much better appearance, having much more flesh upon their breasts. The price paid was eleven cents per pound. The entire display was purchased for the Queen's Hotel, Toronto.

Very few dealers understand thoroughly the proper manner of killing, cleaning and shipping poultry, in order to place it upon the market in the most presentable form. A much higher price is always obtainable for a fowl which is neatly and cleanly dressed, and it is much more readily sold than one that presents a dirty or bruised appearance.

All poultry should be thoroughly fattened and kept from feed for at least twenty-four hours previous to killing, as poultry treated in this way will keep longer and present a better appearance in the market. One mode of killing is to hang the fowl up by the legs, take the head in the left hand, open the beak, and with a sharp-pointed, narrow-bladed knife, make an incision at the back of the roof, which divides the vertebræ and causes immediate death. If the bird does not bleed thoroughly, give a cross cut to sever the jugular vein. Poultry must be thoroughly bled, or it will present a reddish appearance. Pick at once, while warm. With a little care the skin does not become torn and ragged, as it does when scalded. Poultry killed and dressed in this way is of better flavor, and will keep longer, than when scalded, and bring a better price in the market. The blood should be washed from the mouth and the head; then hang in a cool place, as all poultry should be thoroughly cooled before packing. I prefer boxes for packing that will hold about 200 pounds; place a layer of clean rye straw in the bottom of the box, then commence packing by bending the head under the fowl, and then lay it in the corner with head against the end of the box, with back up, and continue in this way until layer is filled. Cover each layer with paper before putting the straw on. The paper keeps the dust from settling on the poultry, and adds much to its appearance. Pack as tightly as possible, filling straw well in the sides of the box, and fill the box full, so that the lid has to be pressed on tightly, then the contents cannot move, for if they should become misplaced the skin would be liable to become disfigured. Never sell a bird with its head off, because the public desire to see that the bird was in a healthy state before being killed.

Where Do Milk-Fats Come From?

Last year from April 12th to July 30th the New York Agricultural Experimental Station, of Geneva, N Y., carried on an elaborate series of experiments treating of the above subject, and has recently issued a popular bulletin in regard to it. The facts brought out by these experiments are so directly opposed to the generally approved theories regarding the formation of fats in milk that they are worthy of particular mention.

There is a common belief that the fat in an animal's body or in the milk comes directly from the food eaten. Chemical tests, however, and microscopic examinations prove that the animal fats are quite different from each other and from the fats in corn, linseed meal and clover hay; yet from a ration containing only these foods the hog will form lard; the steer, tallow; and the cow, butter. This theory of direct transfer of fats was held for a long time even by scientists but is now abandoned by them. Some have held that the milk and body fats are formed by simple chemical transformations of the various food fats; others, that the carbohydrates, which contain no chemical elements not found in the fats, are chiefly concerned in their formation; and others that the nitrogenous compounds of the food, the proteids, are broken up to form fats, the nitrogen, which protein contains and fat does not, being excreted in the urine. The problem, however, is too complex to be explained by the mere transfer of fat particles, and the solution is not at all easy.

Little as is known about body fats, even less has been known about the sources of milk fat. The experiments along this line have been so short, or the balances in favor of one source or another have been so small, that it has been impossible to say whether the milk fat has come entirely from the fat in the food or in the body of the cow herself, from the carbohydrates in the food, from the protein in the food, or from the breaking down of the protein tissue of the udder.

Considering all these results inconclusive, the New York station decided to carry on an experiment on a more extended scale. In this experiment it was planned to secure the following conditions: (1) Foods nearly free of fats were to be used, so that if milk fat was produced in usual quantity, a large amount must come from the cow's body or from the carbohydrates and protein of the food; (2) the experiment to be continued so long that any large draft upon the fat in the cow's body would show in her condition; (3) the protein in the ration to be varied from a quantity below to one above the actual needs of the animal, in order to discover, if possible, just how little protein metabolism (change by physiological processes) is necessary to maintain a given production of milk fat; (4) such data to be recorded as would enable the experimenter to determine at any time just how much had been gained or lost in weight and how much fat or protein had been consumed by the cow, and how much used by her in formation of body weight and milk, or voided in excreta.

For the first two weeks the cow was given foods containing the normal amounts of fats to determine her behavior under natural conditions. For the next eight days she was fed a ration of the extracted foods similar in amount to that first fed, 10 pounds hay, 6 pounds corn-meal, 5 pounds ground oats, and 1 pound wheat gluten. For the next week one-half pound more daily of wheat gluten was given. Then the gluten was decreased and the corn-meal increased at the rate of one-fourth pound daily, until at the end of five days no gluten was fed, and the corn-meal had been raised to seven and one half pounds. This was continued for eight days, at the end of which time the amount of each ingredient of the ration was diminished one-third. This was thought to be less than the animal's needs and was continued for twenty days. Then for three days one-fourth pound gluten was added daily, and finally the original ration of extracted foods was fed for thirty-six days.

The cow seemed to keep in perfect health throughout the experiment. There was also a gradual and quite uniform increase in weight, and an apparent laying on of fat throughout the experiment, except during the twenty days of scant feeding when there was no special change. To judge by all outward signs the cow was fatter at the end of the experiment than when the feeding began.

The milk secreted while feeding the extracted foods was similar in composition to that produced from the normal foods. There was a drop in the percentage of milk solids for a few days following the change to the fat-poor foods, but in a very short time the milk became as rich as before. During the ninety-five days 62.9 pounds of milk fat was produced, while the food contained only 5.7 pounds of digestible fat, so that 57.2 pounds of milk fat could not have come from food fats. It was shown in the experiment that this surplus fat could not have come from fat already stored in the cow's body. The cow was lean when the experiment began and apparently gained fat steadily.

In the fifty-nine days during which records of the income and outgo of both fat and nitrogen were kept, 38.8 pounds of fat was found in the milk and it was shown that the protein in the food