UTILIZATION OF FISH WASTE

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as much oil as I should have liked from the waste, which may result in the meal being too rich in fats, and further, such being the case, the feeds may change chemically through the generation of fatty acids, and thus become unpalatable. There is no doubt, however, that the material could, with suitable machinery, be made into exceedingly valuable feeding materials for the farm, if the raw material, namely, fish waste, can in every case, be obtained fresh.

In my opinion, this fish meal can be made at a cost that would admit of a fair profit to the manufacturer, assuming the waste were obtained free or at nominal cost.

From former experience, I have satisfied myself that fish meal, as such, being the dried residue with all freely-extracted oil withdrawn, must be compounded with 'mill offals' and other materials in order to prevent it chemically breaking down within reasonable time. The meal appears to be somewhat hygroscopic and, owing to its animal origin, it is easily influenced by climatic conditions.

The commodities manufactured must vary according to the type of waste used, and the purpose to which the finished product is to be put. No definite formulæ at this stage of the research can be stated as applicable to this fresh-water fish waste, until the keeping and feeding qualities have been tried out over an extended period.

There is no doubt, however, that satisfactory results can be eventually attained, but much more experience and further research must be applied, since this type of waste varies in composition almost every month of the year.

The types of feeds I compounded were:

- 1. Cattle meal, 75 per cent fish meal.
- 2. Hog feed (cooked), 75 per cent fish meal.
- 3. Poultry scratch feed, 10 per cent fish meal.
- 4. Dog biscuit (baked), 25 per cent fish meal.

I am much indebted to Dr. Frank T. Shutt, the Dominion Chemist, for his chemical analyses of both raw material and other products of my work. The analyses forwarded by Dr. Shutt are as under:

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