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to be administered orally. Mrs. Bassett has been injecting a series of cows with Stilbestrol. They were due for slaughter when we came down and were still on the hook, the buyer taking the risk. They were slaughtered and we were complimented by the meat inspector at Horotiu on the fact that, for the first time for a considerable period, we had taken some cattle to market that were not affected with T.B., and he passed the whole issue. The next morning I got an urgent ring from a very worried meat inspector. The butchers who were boning out refused, unless they were guaranteed complete compensation by the Company, to handle the carcasses concerned because they had a large number of mysterious small yellow nodules all over the ribs and hind quarters. When I explained that they were simply injection sites and not likely to be harmful in any way, the inspector went back to the said butchers, who however, still refused to be placated and went on strike. This is just an indication that injection of hormones for an animal that is to be slaughtered might lead us into some difficulties from a meat inspector's point of view, and certainly some from a butcher's point of view!

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Summary of Paper on  
EXPERIMENTS IN POULTRY BREEDING

by

E.P. Nielsen, Consulting Officer to the New Zealand Dairy Board

This paper presented the results of a series of breeding experiments which arose from an attempt, launched in 1935, to establish a bantam breed which would be the miniature of a White Leghorn.

The experiments demonstrate the possibility of applying existing knowledge of genetics to the development of domestic stock.

The paper is summarised as follows:-

1. From a White Leghorn, Black Leghorn and Bantam base involving but three individual birds, four new breeds have been developed, that are breeding true for their distinguishing characters, while a further three breeds are in the process of being fixed.
2. The development of autosexing breeds from the same source has occurred. Autosexing has been relatively easy to produce in stock carrying the barred factor.
3. It has been clearly demonstrated that intense inbreeding can be carried on over many generations without in any way impairing the vitality of the progeny concerned, always provided that the nucleus stock are the possessors of such vitality.
4. The many characters which combine to distinguish one breed from another (in this case those carried by the White Leghorn) can be fixed in subsequent generations by intense inbreeding, even when crossed with other breeds.
5. The influence of characters from the second breed may also manifest themselves throughout the generations.
6. That an understanding of Mendelian laws of inheritance makes it possible by selective breeding to fix particular characters, and to eliminate others from a line of stock.

This paper is to be published in the December issue of the "Journal of Science and Technology."

Dr F.W. Dry: The improvement of egg laying in recognised auto-sex-linking breeds is a problem which we should like to tackle at the Massey College. I have drawn up some rather elaborate schemes involving crosses to other breeds whose production is good. The success of these plans would depend upon whether modifying factors introduced by another breed upset the sharpness of the difference between the down coloration of the sexes at hatching. Mr. Nielsen's work suggests that an auto-sex-linking breed of good egg-laying capacity might be built on the foundation of a cross between two productive breeds, namely, the White Leghorn and the Barred Rock, the original birds to be chosen of course as judiciously as possible. The hope would be that in that way a breed could be made in which modifying factors contributed by the White Leghorn would make male chicks appreciably lighter than females at hatching. Of course on looking at White Leghorns we cannot see any effect of those modifying factors for the birds are simply white. We must conclude, however, that it is one or more modifying factors from the White Leghorn ancestor that causes Mr Nielsen's new stock to be auto-sex-linking. It may be added that if, as seems not unlikely, only one, or a small number of modifying factors is operating, this factor in Mr Nielsen's stock might itself be exploited in breeding programmes beginning with crosses to other breeds, notably Barred Rocks of good production.

I am flattered that Mr Nielsen should have named his auto-sex-linking stock after me. Some of you may know that the name of Nielsen, or more often the initial letter, attaches to an experimental stock of sheep founded on a ram presented to the Massey College a dozen years ago by Mr N.P. Nielsen, who is the father of Mr E.P. Nielsen. I am put in mind of an article written by J.B.S. Haldane when Bateson died. Had the journal in which Mendel's paper was published and hidden been even scarcer, he said, Bateson might have been hailed as the discoverer of alternative particulate inheritance and been laid to rest in Westminster Abbey. Had he not been forestalled by such people as Lunnett and Pease, an honour of a similar order might have befallen Mr Nielsen.

Mr A.H. Ward: There are at least three principles that are extremely important arising from Mr Nielsen's work. They are principles which Mr Nielsen is using so effectively in preaching the gospel of practical genetics to the dairy farmer. They are:-

- (1) That inbreeding can be used as a tool for fixing characters, provided the foundation stock is sound. We find that most difficult to discuss with the farmer at the present time because of the strong prejudice against inbreeding. It is a pity that there is not a parallel stock in which Mr Nielsen can show the harmful effect of inbreeding faulty stock.
- (2) The necessity for the use of a progeny test, and the reason why selection based on phenotypic characters is not very successful. It is quite obvious throughout Mr Nielsen's work that testing of the parental stock by means of the progeny test is essential in order to demonstrate breeding worth.
- (3) The particulate or unit character of inheritance and the fact that by proper combination of genes which are readily identifiable one can gradually work towards the type of stock required, and perhaps set up new breeds or new strains of animals which would be well adapted to the purpose for which they are required. At the present time breeders, in over-emphasising the sanctity of the breeds, are actually doing something that is harmful, and Mr Nielsen is doing a tremendous amount to offset that particular difficulty at the present time.