As regards the use of tidal streams by the elvers migrating from the open sea to the area of stagnation, an important problem arises. How do they discriminate between the flood and the ebb ?

Van Heusden[1] supposed that differences in salinity play an important part. One could imagine, for example, that the elvers remain on or near the bottom so long as the stream (mostly the ebb[4]) carries water of lower salinity, whereas they leave the bottom as soon as the stream (mostly the flood[4]) provides water with a higher salinity. Our observations have not progressed sufficiently to allow a conclusion in this respect ; probably also the water temperature exerts a certain influence.

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Relationship between Aggressiveness and Egg Production in the Domestic Hen

A relationship between position in the peck order and egg production in the hen was first reported by Sanctuary[1] (quoted by Guhl[2]), who found that the birds in the upper half of the peck order laid more eggs than those composing the lower social level. This observation was confirmed by Guhl[2], who obtained a correlation of 0·26 (P, 0·01) between the number of birds pecked in the peck order and the number of eggs laid by 96 White Rock pullets.

The following observations were made on an Australorp flock maintained on the Animal Husbandry Farm of the University of Queensland. The experiment involved the measurement of aggressiveness of pullets in two groups, the first in battery laying cages and the second in an intensive shed on deep litter.

All birds were scored against panels of 10 birds under standard conditions[3] ; 6 such panels were used. There seemed to be no relationship between aggressiveness score and egg production for birds housed in laying cages and, while there appeared to be some effect of aggressiveness on egg productivity in intensively housed birds, it did not appear to be linear. It seems that the majority of birds with low egg production also have low aggressiveness scores. This can similarly be discerned by inspection of Guhl's[2] scatter diagram.

Since Collias[4] has reported that position in the peck order is one of the factors which makes for success in single encounters of the type used in scoring aggressiveness, and correlations between scores and peck order position in assembled groups of these birds have been demonstrated, it would appear that the low aggressiveness scores are reflecting low peck order position in the intensively housed birds. Low position in the peck order is related to low priority at the feed troughs, nests and roosting places[5], and it would appear that it is the rather harsh environmental conditions to which these birds are subjected that is responsible for their low egg production and thus for the observed correlation.

Blyth[6] considered the shape of the egg production frequency distribution to be fundamentally normal although in fact it is skewed with a long 'tail' towards zero. She considered this to be the result of factors not specifically concerned with egg production. The frequency distribution for egg production of sisters housed under three environments, caged, semi-intensive and intensively on deep litter, shows an increasing degree of negative skew from cage to intensive. This suggests that position in the peck order is certainly one of these factors, though the fact that the 'tail' is still present in the caged birds suggests that it is not the only factor. Recent work[7] involving the feeding of antibiotic and vitamin B_{12} supplements has been effective in raising the egg production of low-producing birds while apparently leaving the high-producing birds unaffected. This suggests that this treatment has been effective in removing even more of the 'tail' from the distribution.

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Sodium Phosphate Crystals on Salt Fish

Several times in the past few years, samples of undried or partly dried salt cod with an accumulation of crystals appearing over the surface have been submitted to this laboratory for examination. These deposits did not resemble either the sodium chloride or the calcium sulphate crystals often found on salt fish. One sample had many water-clear rhombic crystals with edges 2 cm. or more long. Others had a second type of crystals : they were dry, powdery white, and thickly scattered over the surface. Curiously, chemical analysis indicated that both types of crystals contained large proportions of phosphate and sodium, a small amount of chloride, but no sulphate, calcium or magnesium.

When the clear rhombic crystals were exposed to the dry laboratory atmosphere for a day, they changed into a white powder, similar to the second type. This powder contained 20·0 per cent moisture and appeared to be the dihydrate of disodium hydrogen phosphate. On analysis of the sample dried at 105° C., the sodium, phosphate and chloride contents indicated 96·0 per cent disodium hydrogen phosphate with 3·0 per cent sodium chloride.

Thus, the clear rhombic crystals appear to have been the dodecahydrate, the least soluble of the sodium phosphates, which in a dry atmosphere loses water to form the dihydrate (containing 20·2 per cent water) in a white powdery form. This is the form found in samples of the second type.

Since sufficient observations on the solubility of disodium hydrogen phosphate in a solution saturated with sodium chloride were not available, determinations were made at temperatures varying from 0° to 20° C. The results, with some values taken from the literature[1,2], are given in Table 1, and in Figs. 1 and 2.