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[1] Grabar, P., and Williams, C., *Biochim. Biophys. Acta*, **17**, 67 (1955).
[2] Formusa, K. M., Benerito, R. R., Singleton, W. S., and White, J. L., *Analyt. Chem.*, **29**, 1816 (1957).
[3] Plackett, P., and Buttery, S., *Nature*, **182**, 1236 (1958).
[4] Nakamura, S., and Ueta, T., *Nature*, **182**, 875 (1958).

Changes in *p*H and Temperature in Poultry Breast Muscles at Slaughter

DURING a study of factors which might affect the tenderness of poultry meats, some observations were made on the changes in *p*H and temperature occurring in the breast muscle of birds during and after slaughter.

Needle electrodes (Beckman No. 40470) and a thermocouple were tied into the muscle prior to slaughter. The thermocouple was connected to a recorder and the temperature was automatically recorded at ½-min. intervals. *p*H readings were made every 30 sec. during the first 5 min. or so and then at 2- or 5-min. intervals, depending on the rate of fall of the *p*H.

The birds were slaughtered in a manner simulating commercial practice, that is, they were suspended head down and the throat cut. This procedure leads to a rapid bleeding.

Chickens, turkeys and geese were examined.

In all the types of birds examined there was a rise in temperature within 5 min. of the throat being cut, followed by a slow fall. In chickens and turkeys this was most marked, as is shown in Fig. 1, in some cases being as much as 3·5° F. The rise in geese was not as marked and in no case exceeded 1° F. This rise is probably due to continued work by the muscle in the absence of the heat-regulating power of the blood. Chicken and turkey breast muscles are 'white' meats, whereas goose breast muscle is a 'dark' meat. It would appear that there is a definite difference in the temperature reaction of these two types of muscles.

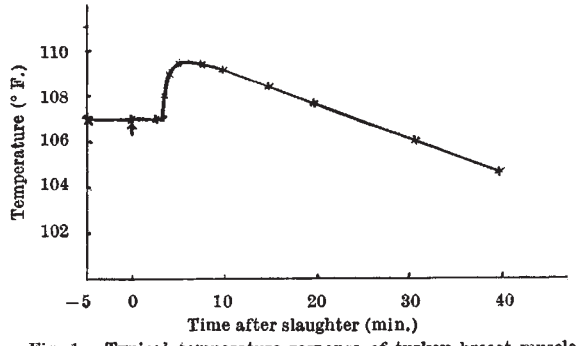

Fig. 1. Typical temperature response of turkey breast muscle after slaughter

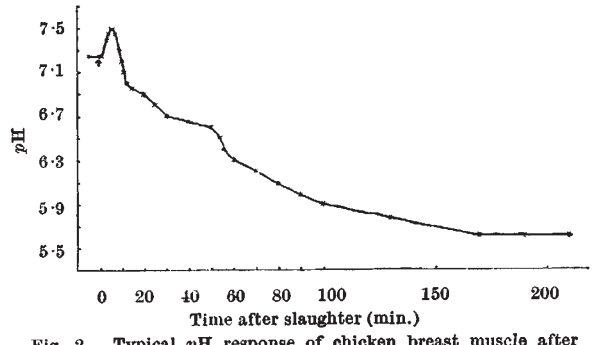

Fig. 2. Typical *p*H response of chicken breast muscle after slaughter

Also, in all the types of poultry examined there was at first a rise in *p*H followed by a gradual stepwise decline as is shown in Fig. 2.

Table 1 gives the mean and range *p*H and temperature rises.

Table 1

Type of bird	No. of birds	Mean *p*H rise	Mean temperature rise (° F.)
Chicken	15	0·20 (0·05–0·30)	1·0 (0·0–2·0)
Turkey	5	0·25 (0·05–0·50)	2·1 (1·00–3·50)
Goose	6	0·15 (0·05–0·25)	0·55 (0·25–0·75)

(Figures in brackets are the range)

Reports by Bate-Smith and Bendall[1] and Scaife[2] on the changes in *p*H occurring in beef and pork muscle after slaughter make no mention of the rise in *p*H that was observed in these studies. This may be due to the initial *p*H being defined (Bate-Smith[1]) as "the *p*H of the muscle within 5 minutes of slaughter". In most cases it was found that the *p*H had already begun to decline 5 min. after slaughter.

A full report of this work will be published elsewhere.

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[1] Bate-Smith, E. C., and Bendall, J. R., *J. Physiol.*, **110**, 47 (1949).
[2] Scaife, J. F., *J. Sci. Food Agric.*, **6**, 467 (1955).

Relaxation of Glycerol-treated Muscle Fibres by Acetone

CERTAIN sulphydryl reagents such as 'Salyrgan'[1] and certain chelating agents such as ethylenediamine tetraacetate[2,3] have been known to have a lengthening action on glycerinated muscle fibres in the presence of adenosine triphosphate. A reasonable explanation of this relaxing action by 'Salyrgan' has already been given[1]. The chelating actions of ethylenediamine tetraacetate and its analogues are of interest. We have reported[4], however, using seven different chelating agents, that their chelating activities were not parallel with their relaxing capacities. Thus the mechanism of these agents remains unsolved.

It was found that acetone had a reversible relaxing action on glycerinated fibres, like ethylenediamine tetraacetate and 'Salyrgan' (Fig. 1). The concentration of acetone required was rather high, but the action was not due to the non-specific effect of high concentration of non-electrolyte, because sucrose and glycerol were quite ineffective in much higher concentration. Acetylacetone and ethyl acetate, especially the latter, were much more effective than acetone, but they were not so complete as acetone in their

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