Table 2. Myoglobin in Relation to 9 Months Enforced Inactivity in Fowls

Group	No. of fowls	Treatment	(% wet weight) Myoglobin gastrocnemius	(% wet weight) Pectoralis major
A	10	Normal activity	0·177 ± 0·016	0·036 ± 0·001
B	10	'Immobile'	0·116 ± 0·011	0·034 ± 0·001
Significance of difference between means, at 0·1 per cent level			*A* > *B*	nil

exercised rats, and the degree of acidity has been correlated with the quantity of lactic acid produced in the muscles[4].

The pectoral and leg (gastrocnemius) muscles of a group of fowls which had been allowed considerable freedom to forage, and of a comparable group closely confined in a battery over a period of nine months, were also analysed (Table 2).

Myoglobin concentrations in the gastrocnemius muscles of the normally active control group were significantly higher (0·1 per cent level) than those of the 'immobile' birds. It is interesting to note, however, that the pectoral muscles, which were not exercised by either group, showed no difference in pigment content.

It is concluded from these results that an increased myoglobin content represents one of the responses of muscle tissue to the influence of enforced activity, provided the latter continues over an extended period ('training'). Over a short period, even the most severe exercise elicits no such response, although it profoundly diminishes the glycogen reserves of the muscle.

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Hyaluronidase as an Adjuvant to Methylene Blue in staining of Nerve Fibres

It is notoriously difficult to produce consistent and uniform results in the vital staining of nerve fibres with methylene blue. Using Weddell's methods[1,2], both local and intravenous methylene blue in rabbits have given unsatisfactory results, with patchy and inconsistent staining.

Very considerable improvement in uniformity of staining of the nerve plexuses of the ear in rabbits has been achieved by adding hyaluronidase to the solution of the dye immediately before injection, in the proportion of 1,000 'Benger' units to 20 ml. of the dye solution. After local injection, diffusion of the dye throughout the corium and subcutis of the ear is rapid, particularly if the ear is lightly massaged. In other particulars, Weddell's method[1] has been followed.

Similarly, better staining is obtained after intravenous injection of methylene blue to which hyaluronidase has been added. Given intravenously, the enzyme appears to be relatively non-toxic; 6,000 units were added to the injection fluid in the case of a 2-kilo rabbit without apparent toxic effect. In all experiments the ordinary B.D.H. preparation of methylene blue was used as a 2·5 per cent solution in isotonic glucose. To prevent any possibility of saline over-dosage, the glucose solution has been used in preference to physiological saline as a vehicle for the dye. 20–30 ml. of the solution plus hyaluronidase were injected slowly over a period of 2–4 hr. The time factor is not significant. For examination of the nerve plexuses of the ear injection is made into one of the hind limb veins, as injection into the dorsal vein of the ear produces gross non-specific staining of the tissues around the site of injection from local diffusion of the dye.

Weddell[1] has pointed out the value of vasodilatation of the skin area being investigated, and certainly less uniform results in the ear are obtained when there is vasoconstriction. The induction of an acute inflammatory vascular reaction of the dorsal skin of the ear by rubbing with xylol during the injection period has produced the most consistent and uniform staining. This would suggest that uniformity of staining follows widespread capillary dilatation which reduces the need for tissue diffusion of the dye to the minimum.

The addition of hyaluronidase to the solution of methylene blue in supravital staining of nerve plexuses in human skin has also given promising results. An alternative to this method would be the injection of the enzyme locally into the skin before excision and supravital staining, since Bywaters *et al.*[3] have shown that the dermal barrier to the spread of dye after hyaluronidase injection is not reconstituted for 24 hr.

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The *X*-Organ of Crustacea

Interest in the location and identity of the *X*-organ of decapod crustaceans has been renewed with the discovery of its neurosecretory nature, for it is one of the major sources for the secretory material of the sinus gland[1–3]. The total endocrine complex formed by these two organs strikingly resembles the brain – corpora cardiaca complex of insects. The appearance of the *X*-organ varies in different species; but apparent homologues have been located in the nervous system of the eye-stalk of decapods by either of two methods: (*a*) from the original observation of Hanström[4,5] that it is usually associated with the innervation of the sensory pore