anisotropy ratio at the same concentration. A variation of l_f with concentration can also be observed⁷; but for a large range of concentrations these variations are very small, and minor errors in concentration would have no bearing upon the results regarding length of particle.

Further work is required to explain these results. However, it may be worth while to consider the following provisional explanations:

(1) Contamination of the preparations, especially of myosin from atrophic muscle, with actin, is unlikely, since addition of adenosine triphosphate does not decrease birefringence, as would be the case if some actin were present.

(2) A modification of extractability of different myosins, as Dubuisson⁸ observed after muscular contraction, is possible. Investigation of the electrophoretic properties of myosin prepared from normal and atrophic muscle is under way in an attempt to elucidate this problem.

(3) Finally, it may be that myosin of atrophic muscle is actually modified in some manner. If this proved to be true, it would represent, as Pauling has described for haemoglobin, a "molecular disease".

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Electrical Resistance and Structure of the Hen's Egg

THE yolk and white of the hen's egg show wide differences in osmotic pressure, pH and ionic composition, which are maintained for a long period of time on storage. This has frequently been supposed to result from a property of the vitelline membrane which separates the two phases, although J. Needham, who has recently reviewed this subject¹, has concluded that there must be the co-operation of some physical property of the yolk and white.

As this property can only be a barrier to diffusion, and might be reflected in a low electrical conductivity, this has been measured for the various structures of the intact egg. The electrodes were of platinum wire coated with varnish except for 3 mm. at the tip, which was flattened to increase its conducting area, and blackened.

	White ($\Delta = -0.44^\circ \text{C.}$)	Yolk ($\Delta = -0.56^\circ \text{C.}$)	
		Broken-up	Intact
Conductivity Median (mho/cm. $\times 10^{-4}$, 18°C.)	8.25	2.84	0.070
Range	6.7-9.4	2.5-3.4	<0.05-0.11
Diffusional resistance	1.3	4.85	200

One electrode was pushed up from below through the intact yolk until close below the upper surface of the vitelline membrane, and the other brought into proximity in the white lay upon it. When the membrane was ruptured between them, there was no marked change in resistance. This indicated that it was not an important barrier and would have to be isolated in order to estimate its contribution. Accordingly, the membrane was carefully washed free of yolk with homogenized white, and introduced between the closely spaced electrodes of a Kohlrausch cell under some more of the same liquid. On withdrawing the membrane, a just measurable decrease of resistance was produced—one that could have been compensated for by about a 30- μ increase in the electrode spacing.

Two wire electrodes mounted side by side, 4 mm. apart, were used to measure the conductivity of the white and yolk. Summarized in the table are the results from 24 eggs from one day to four months old; however, no marked trends with age were found. Shown also is the ratio between the median conductivity of each phase and that of an isotonic sodium chloride solution, which is a rough indication of the resistance to ionic diffusion. A stock 1 per cent sodium chloride solution served throughout as a standard of conductivity.

The conductivity of the white was not significantly different *in situ* or after separation and homogenization.

The yolk, however, showed a much lower conductivity when the electrodes were introduced into it through a small cut in the membrane than when it had been broken up by separating it in a syringe. The measured value often differed appreciably from point to point in the intact yolk, probably as a result of damage caused by the electrodes, and, though minimum values are quoted in the table, they are possibly still too high. Making allowance for this variability, the conductivity seemed to be uniform and isotropic throughout the outer $\frac{1}{2}$ -1 cm. of yolk, but generally rose tenfold towards its centre.

To explain this high resistance to diffusion, there must be some internal structure in the yolk—a continuous solid phase, which can be easily broken down mechanically to yield a continuous aqueous phase. On the basis of these results, no other factor would appear to be responsible for the delay in equilibration in the intact egg.

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