et al.[5]. The reineckate precipitates, dissolved in acetone, were decomposed by using accepted methods[3,5,6] and the final solutions were brought to dryness under reduced pressure at 60° C. Inorganic salts were removed by repeated methanolic extraction. The material precipitated with alkaline reineckate proved to be a mixture of at least two substances with melting points of 192°–196° C and 243°–250° C. Chloroaurate treatment[7] yielded two derivatives which melted at 152°–154° C and 257°–263° C. In certain instances material with a melting point of 228°–232° C was also obtained which could not be further purified by washing with 1 per cent hydrochloric acid or by crystallization from ethanol. The materials precipitated with acid reineckate had melting points of 143° C and 190°–194° C: the chloroaurate derivative of these substances melted at 152°–154° C. Pure carnitine, carnitine hydrochloride, and carnitine chloroaurate melt at 196°, 142° and 152° C, respectively. Pure choline and choline chloroaurate melt at 247° C and 260°–263° C, respectively. (Choline chloroaurate crystallized from acid ethanol melts at 230° C.)

Further evidence for the presence of carnitine was also obtained from paper chromatography. A portion of the hydrolysate was concentrated to near dryness, extracted with methanol to remove salts and the final solution was subjected to chromatography in the butanol/acetic acid/water (4:1:1) system[8]. Two components were detected with iodine vapour, which corresponded to carnitine (R_F 0·22) and choline (R_F 0·40).

From these results it would appear that there is some bound carnitine in association with phospholipid fractions of bovine brain. In support of this is the fact that some carnitine remains in the phospholipids even after acetone and water extractions. Since carnitine resembles choline in chemical structure, it is not unlikely that this former substance is a constituent of phospholipid as was suggested by Mehlman and Wolf[1].

Investigations are now under way to estimate quantitatively the amount of carnitine in phospholipids of brain and to see if phosphatidyl carnitine could not account for at least part of the bound carnitine.

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Selenium Content of Fresh Eggs from Normal and Dystrophic Chickens

THE biological role of selenium is as yet unknown, but the evidence accumulating from many investigations[1–13] suggests that this element is necessary in trace amounts for normal structure and function of muscle and other tissues. In our investigations on the possible relation between selenium content of tissues and muscular dystrophy occurring as a hereditary disease in chickens, it seemed appropriate to determine the amounts of selenium in eggs from normal and dystrophic birds. We thank Prof. W. Landauer of the University of Connecticut at Storrs for his collaboration.

After the eggs had been weighed, albumen and yolk separated and freeze-dried, the selenium was determined by the methods previously reported[14,15].

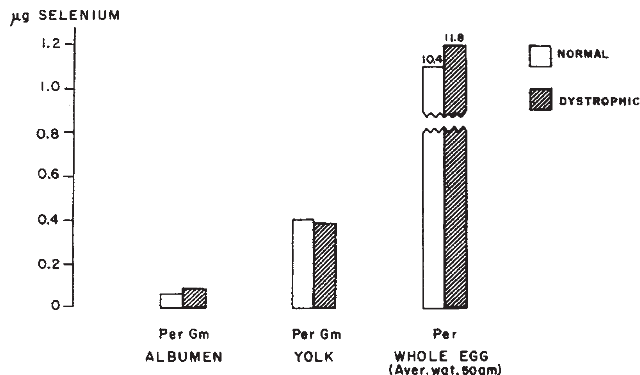

Fig. 1. Selenium content of fresh eggs. Distribution between yolk and albumen

The results of our investigations are shown in Fig. 1. The open columns represent the arithmetic mean of micrograms of selenium per gram of fresh albumen, yoke and whole egg from normal chickens, and the striped bars show the mean values from dystrophic chickens.

There was no difference in the selenium content between the eggs from the normal and dystrophic birds; each contained about 11 micrograms of selenium. However, notable and interesting differences in the distribution of the selenium within the egg were found. The yolk represents only about a third of the weight of the whole egg but it contained most of the selenium. Similar results were found in all the eggs which were analysed.

The presence of appreciable amounts of selenium in the egg, and especially in the yolk, may point to a necessity for selenium in the early development of the embryo. Investigations to test this hypothesis are in progress.

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Structure of 'Complex' Phospholipids

RECENTLY, Collins has described the presence of 'complex' phospholipids in animal tissues[1,2]. These compounds are shown to be very sensitive towards silicic acid and other mild hydrolytic reagents. This characteristic is believed to be the reason why other workers failed to detect the 'complex' phospholipid fraction, since chromatography over silicic acid is universally utilized in the study of phospholipids. Collins defines the complex

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