expectation that the high concentrations of glycine maintained, and the low blood carbohydrate values obtaining after 1½ to 2 hours (glucose, 14 mg% at the close of Exp. 2) in the usual experiment of this type, should have favored the metabolism of glycine. Again, with the present results taken at face value, the glycine may be calculated to have yielded only around 0.5% of the total CO_2 output of the heart (on the assumption that both carbons of the molecule have gone to CO_2) as compared with values of 20-30% from acetate,[1] administered in concentrations of the same order of magnitude as those of glycine.

Summary. Glycine, labeled with heavy carbon in the carboxyl position, was administered to the completely isolated, working, cat heart. Isotopic analysis of the collected respiratory CO_2 indicated that if splitting of the 2-carbon chain of glycine with conversion of the carbon to CO_2 was accomplished by the heart muscle, it occurred only to a slight extent.

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Blood and Tissue Chemical Studies in Fowl.*

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Normal blood and tissue levels of the usual organic constituents with especial reference to total cholesterol and cholesterol esters and other lipids, were determined as a basis for projected fat metabolism studies. Domestic fowl was the chosen experimental animal because of the known high normal cholesterol production, especially of certified 260 to 320 eggs per year R.O.P. sired hens. Laying hens, after the sixth month, have been found to have a subintimal atherosclerosis of the aorta and coronary arteries, quite similar microscopically to the human type, in half the specimens examined by Dauber.[1] As the age increases, the frequency of gross lesions has been noted to increase.

We have sacrificed 26 barred rocks fed on a standard growing mash (Purina) at ages from 11 weeks through 22 weeks and 26 hens of various standard breeds that had been on a standard laying mash, (Purina). Blood was collected from the severed neck vessels; part was oxalated and part was allowed to clot and the serum expressed. The aorta, heart, and in later studies, about 0.25 g of liver were removed. The gross adipose tissue was dissected off and approximately 0.25 g of cleaned aorta and lean heart muscle and liver were weighed accurately, minced carefully, extracted for 12 hours with 3 to 1 parts of alcohol and ether.

The blood serum was analyzed by Folin's microchemical methods for glucose;[2] non protein nitrogen;[3] and Leiboff and Kahn's method for urea nitrogen;[4] Bloor's original method for cholesterol[5] and Bloor and Knudson's digitonin method[6] for cholesterol esters;

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2 Folin, O., *J. Biol. Chem.*, 1929, **82**, 92.

3 Folin and Wu, *J. Biol. Chem.*, 1919, **38**, 81.

4 Leiboff, S. L., and Kahn, B. S., *J. Biol. Chem.*, 1929, **83**, 347.

5 Bloor, W. R., *J. Biol. Chem.*, 1916, **24**, 227.

6 Bloor, W. R., and Knudson, A., *J. Biol. Chem.*, 1916, **27**, 107.

TABLE I.
Blood Chemical Levels in Normal Fowl.

Controls	NPN mg/ 100 ml	Urea mg 100 ml	Glucose mg/ 100 ml	Cholesterol mg/ 100 ml	Cholesterol mg/.250 g of aorta	Serum protein g/100 ml	Sex and age
Controls (Y) (26)	38.5	19.6	171.6	217.4	172.7	4.03	Young B. R.
S. D.	±4.7	±2.6	±23.6	±25.0	±33.2	±0.5	11-22 wk old hens
Controls (A) (26)	36.2	19.1	177	248	230	6.1	various
S. D.	±6.4	±3.0	±48.4	±37	±43.2	±1.3	breeds

TABLE II.
Blood and Tissue Chemical Levels in Normal Fowl.

	Blood cholesterol total mg/100 ml	Esters mg/100 ml	Phospholipids mg/100 ml	Tissue cholesterol, total/esters: Aorta mg/250 mg	Heart mg/250 mg	Liver mg/250 mg
Controls (B) (6)	232.	153.		249/	271/	337/
S. D.	±21	±5.6		±29 T / E	±49 T / E	±54 T / E
Controls (C) (26) (4)	271.	179.	9.6	230/176.	288/234.	342/240.
S. D.	±37	±19	2.8	±45/±20	±86/±19	±62/±19

T: total; E: esters.

King's method[7] for total and inorganic phosphorus; and the $CuSO_4$ falling drop method[8] for calculating the total serum protein levels.

The ether alcohol extracts of aortic arches, hearts, and livers were quantitatively analyzed for content of cholesterol, cholesterol esters and the amount in exactly 0.25 g of each tissue was calculated.

The 26 young barred rocks showed normal levels for the usual blood constituents (Table I). The cholesterol levels were relatively low in both sexes from the 11th to 14th weeks and then started to rise, especially in the pullets, seemingly dropped off some at the 16th week as minute egg yolks appeared and then rose slowly. The cholesterol levels in the aortae seemed to follow the blood levels. The blood protein levels were lower than for mammals.

Among the 26 older hens, all showed normal values for the usual blood constituents (Table I), except for the serum proteins which were slightly low, however. The heavy breeds as barred rocks and the high egg producing white leghorns showed the highest levels of lipids in the blood and tissues.

Some further data obtained from control specimens obtained simultaneously with those of the feeding series are given in the Table II.

[7] King, E. J., *J. Biol. Chem.*, 1932, **26**, 292.

[8] Phillips, R. A., *et al.*, U. S. Navy Res. Unit at the Hosp. of the Rockefeller Inst. for M. R., 1943.