days the cholesterol esters are reported to be much increased in the embryo(13). The reason for this discrepancy is not apparent. However, the livers had been removed from all of the embryos, and since a large portion of the esterified cholesterol occurs in the liver, and livers of the 21-day-old embryos were much larger than the others, some cholesterol may have been unaccounted for. This seems not to be the case in samples other than at 21 days. The majority of these values obtained agree well with those in the literature(13).

Summary. The cholesterol content (free and esterified) of the chicken egg during incubation did not differ from that of its Vit. B_{12}-deficient counterpart. Under the conditions of this experiment where a marked B_{12} deficiency existed, Vit. B_{12} has no effect on cholesterol status of the developing chick embryo.

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Brain 5-Hydroxytryptamine in Ozone-Exposed Rats.* (26866)

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A previous communication(1) discussed the elevation of lung 5-hydroxytryptamine (5-HT) content in rats subjected to acute ozone exposure. In studying potential mechanisms of this increase, the possibility that non-pulmonary tissues might be sources of lung 5-HT was considered, and brain 5-HT levels of ozone-exposed rats were determined. The following describes the results.

Materials and methods. Male albino Wistar rats (225-275 g) were exposed for 4 hours to ozone, 6 parts per million (p.p.m.) by volume in air, as previously described(1). Control animals were handled similarly but exposed to air alone. Control and exposed groups consisted of 22 animals each. After exposure the animals were anesthetized with pentobarbital sodium. Brain stems were severed at the foramen magnum, the brains removed, weighed, and assayed for 5-HT spectrophotofluorometrically in an Aminco-Bowman spectrophotofluorometer by the method of Bogdanski, *et al.*(2). Brain protein was determined by the method of Lowry, *et al.* (3).

Results. Exposure of rats to 6 p.p.m. ozone by volume for 4 hours resulted in a significant decrease in brain 5-HT from a mean control value of 0.63 $\pm$ 0.14 μg/g to a mean of 0.39 $\pm$ 0.10 for the ozone-exposed group. In view of the observations by Bourdillon *et al.*(4) that inhalation of 5% CO_2 increased Na^{24} entry into the cerebrospinal fluid, the

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TABLE I. Mean Brain Weight, Protein, and 5-HT of Normal Male Rats Exposed for 4 Hours to Air Alone and to 6 p.p.m. Ozone.

Group	g brain/100 g body wt	g protein/100 g brain	μg 5-HT/g brain
Control	.72 ± .06	14.8 ± 1.4	.63 ± .14
Ozone	.78 ± .07*	13.7 ± 1.3	.39 ± .10†

* $P < .01$. † $P < .001$.

possibility was considered that hypercapnia resulting from pulmonary edema might cause brain edema and that this might produce an apparent decrease in brain 5-HT concentration by dilution. That some brain edema may occur is indicated by a slight increase in mean brain weight per 100 g body weight of the ozone-exposed group; however, no significant change is noted in brain protein content. The increase in brain weight (8%) is not sufficient to account for the marked decrease (38%) in brain 5-HT. These results are summarized in Table I.

Discussion. Brain 5-HT of ozone-exposed rats is lost and not merely diluted by the development of brain edema. This finding presents a series of problems. First is that of the nature of the 5-HT release from the brain and whether it is similar to that induced by reserpine. Next is the question of the fate of the released 5-HT, *i.e.*, if it is destroyed immediately in the brain or if it may be transported to the lung thereby accounting for part of the increase in this organ. If the later, the transport mechanism should be studied. Finally, the depression observed in ozone-exposed rats may be related, in part at least, to the loss of brain 5-HT; this should be clarified. These problems are now under investigation, and it is hoped that answers will soon be available.

Summary. A significant decrease in brain 5-HT of rats exposed to 6 p.p.m. ozone for 4 hours has been demonstrated. This was an actual loss of 5-HT from the brain, not merely an apparent decrease resulting from dilution by brain edema although some edema occurred.

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Effect of Homologous Blood Components and Heterologous Lysed Red Blood Cells on Dog Renal Dynamics.* (26867)

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Peripheral intravenous infusion of homologous lysed red blood cells produced renal vasoconstriction in dogs(1). These changes in renal dynamics varied with rate of increase in plasma hemoglobin concentration rather than level acheived. On the contrary, no significant renal response occurred when the injection was made into the portal vein(2). Since rates of hemoglobin infusions and plasma hemoglobin concentrations were comparable in the peripheral infusion and portal infusion studies, it was thought possible that passage through the liver altered the effects of these solutions on glomerular filtration rate and effective renal plasma flow. In these experiments, lysed washed dog red blood cells were used, containing red blood cell stroma and other materials of the red blood cells in

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