

histamine resulting from thyroidectomy nor the increase in skin histamine occurring after thyroid administration is due to a shift of histamine from skin to other organs and vice versa. The effect of thyroidectomy and of thyroid administration upon the histamine content of the tissues of other laboratory animals is under investigation.

TABLE I.
Histamine Content of Rat Tissues.

	Tissue	No. of animals	Histamine base in μ g per g of tissue	
			Range	Mean
Normal	Skin	10	10.9-16.5	11.5
	Liver	8	>0.2- 2.8	0.8
	Lung	11	3.6-10.9	5.8
Thyroidectomized	Skin	8	2.8- 8.2	4.8
	Liver	9	>0.2- 1.0	0.18
	Lung	9	>0.2-10.7	2.8
Hyperthyroid	Skin	12	10.9-32.9	21.2
	Liver	12	>0.2- 3.0	1.1
	Lung	12	>0.2-12.0	6.4

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Experimental Analysis of Kuo Vaseline Technique for Studying Behavior Development in Chick Embryos.†

R. FREDERICK BECKER.* (Introduced by W. F. Windle.)

From the Anatomical Laboratories, Northwestern University Medical School, Chicago.

The purpose of this study is to examine the experimental method used by Kuo¹⁻⁵ to study development of embryonic behavior in the chick. The conditions under which Kuo's experiments were performed,^{1, 2} were as follows.

† Complete data will appear in the final article to be published in *The Journal of Genetic Psychology* in the near future.

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¹ Kuo, Z. Y., *J. Exp. Zool.*, 1932, **61**, 395.

² Kuo, Z. Y., *J. Exp. Zool.*, 1932, **62**, 453.

³ Kuo, Z. Y., *Psych. Rev.*, 1932, **39**, 499.

⁴ Kuo, Z. Y., *J. Comp. Neurol.*, 1939, **70**, 437.

⁵ Kuo, Z. Y., *Psych. Rev.*, 1939, **46**, 93.

The shell of the incubating chick's egg was opened in the region of the respiratory air space, exposing part of the inner shell membrane. This was coated with a thin layer of liquid vaseline to render it transparent. The eggs were then observed daily while they incubated upright on their small ends. The impression is given that the same chick could be observed daily from the 2nd, or earliest day of operation, to the 21st, or day of hatching. Except in one paper⁶ in which he reported placing only a spot of vaseline on the membrane above the embryo, Kuo has consistently referred to this original procedure.^{1, 2} Behavior observed under such conditions he has considered normal.

Because we questioned the physiologic soundness of this procedure, limiting as it does the normal respiratory exchange of the chick, experiments were undertaken to determine the chances of viability and normal development in chicks incubating under these and similar conditions. Kuo did not record the number of chicks which hatched or the number which failed to do so.

Three experiments were run. In the first, 72 eggs were incubated and operated exactly as described by Kuo.¹ The inner shell membranes of random groups of these eggs were coated with a thin layer of melted vaseline on the 3rd, 4th, 7th, 8th, or 11th day of incubation. None of these chicks survived more than 6 days; 72% died within 3 days of operation. Cyanosis was observed in every case. Eight normal controls, unopened and lying on their sides, hatched satisfactorily and developed into normal healthy chicks.

In the second experiment, 44 eggs were prepared in a similar manner, but vaseline was applied only to a small localized area of the inner shell membrane above the embryo on the 3rd or 4th day of incubation. None survived more than 2 days after operation. Three normally incubated unopened controls hatched; one other died of unknown cause on the 11th day.

In the third experiment, the shell at the large end of 37 eggs was painted with clear white shellac on the 1st, 3rd, 4th, 7th or 11th day of incubation. Twenty-six embryos failed to hatch; 87% of these died before the 13th day of incubation. Of the 11 which hatched, only 4 were normal healthy birds. The other 7 were abnormally developed (stunted, club feet, twisted necks, weak legs, etc.) and died within 3 days after hatching. Four unshellacked eggs incubating with the experimental eggs hatched into normal healthy chicks.

The results of the third experiment agree with the early reports

⁶ Kuo, Z. Y., and Carmichael, L., *J. Psychol.*, 1937, 4, 343.

of Baudrimont and St. Ange⁷ and Dareste⁸⁻¹⁰ who found that obliteration of the respiratory air space by varnishing the large end of the shell led to asphyxial death of the embryo. Varnishing over the small end did not affect development in any way.

The results of oiling the shell membrane are not in agreement with Kuo's reports that chicks develop normally when the inner shell membrane is vaselined. It appears that such a procedure likewise engenders anoxemia. This fact, considered in the light of recent studies on behavioral development in bird and mammalian embryos,¹¹⁻¹² may explain why Kuo frequently encountered pre-hatching respiratory activity and somatic "mass motility" in his specimens.²⁻⁵ Even in the normal, undisturbed, incubating egg an adequate gaseous exchange between the chick and the outside atmosphere is maintained with difficulty.¹³ Vaselining the inner shell membrane in the region of the air space, designated by some as the "avian placenta," leads to abnormal, asphyxial behavior patterns.

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Pathogenicity of "Carrier" Strains of *Endamoeba histolytica* in the Experimental Dog.

JOHN E. TOBIE.* (Introduced by E. C. Faust.)

From the Department of Tropical Medicine, Tulane University of Louisiana, New Orleans, La., and Tulane Amebiasis Unit, National Institute of Health.

For many years it has been recognized that individuals may harbor *Endamoeba histolytica* without exhibiting clinical symptoms. Such individuals have often been termed healthy carriers. It has been suggested that this organism may not always invade tissue but that it may live in the large bowel as a commensal. Brumpt¹ holds this belief and consequently divides the organism into 2 separate species according to its pathogenicity or non-pathogenicity

⁷ Baudrimont, A., and St. Ange, M., *Ann. Chim. (Phys.)*, 1847, Series 3, **21**, 195.

⁸ Dareste, M. C., *C. R. Acad. Sci.*, Paris, 1855, **41**, 963.

⁹ Dareste, M. C., *Ann. Sci. Nat.*, 1855, Series 3 (Zool.), **4**, 119.

¹⁰ Dareste, M. C., *C. R. Soc. Biol.*, 1857, **9**, 99.

¹¹ Windle, W. F., and Barcroft, J., *Am. J. Physiol.*, 1938, **121**, 684.

¹² Windle, W. F., and Becker, R. F., *Arch. Neurol. and Psychiat.*, 1940, **43**, 90.

¹³ Romijn, C., and Roos, J., *J. Physiol.*, 1938, **94**, 365.

* Research Fellow in Tropical Medicine, Tulane University.

¹ Brumpt, E., *Trans. Roy. Soc., Trop. Med. and Hyg.*, 1928, **22**, 101.