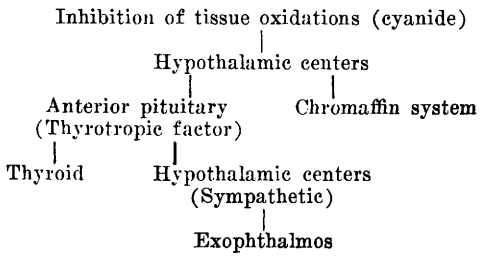
an increased production of the thyrotropic hormone. Whether the stimulation of the anterior pituitary is a direct cyanide action or an indirect result of stimulation of the autonomic nerve centers in the hypothalamus caused by the general tissue oxidation inhibiting effect of cyanides is unknown, although there is abundant evidence in favor of the latter view; that is, that the thyroid response, the pituitary response, the adrenal response, and the exophthalmos are the expressions of the organism's attempt to overcome the metabolism depressing action of HCN.

Our present view of the mechanisms involved in the production of thyroid hyperplasia and of exophthalmos by cyanides and by the thyrotropic hormone may be presented schematically as follows:



Cyanides appear to act by inhibiting metabolic processes. This inhibition stimulates the hypothalamic centers, which in turn stimulate the pituitary to produce the thyrotropic hormone, which in turn powerfully stimulates the thyroid gland and independently the sympathetic centers in the mid-brain causing exophthalmos.

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Respiratory Quotient of Cerebral Cortex in B_1 Avitaminosis.

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The investigation of Peters and his coworkers[1] has shown that the ability of the brain to oxidize lactic acid is decreased in polyneuritic pigeons. Since the respiratory quotient of the cerebral cortex of normal animals is unity,[2] probably due to the oxidation of

[1] Gavrileseu, N., Mieklejohn, A. P., Passmore, R., and Peters, R. A., *Proc. Roy. Soc.*, 1932, **110** B, 431.

[2] Himwich, H. E., and Nahum, L. H., *Am. J. Physiol.*, 1932, **101**, 446. Dickens, F., and Simer, F., *Biochem. J.*, 1930, **24**, 1301.

TABLE I.
Respiratory Metabolism of Cerebral Cortex.

Animal	$\frac{CO_2\ mm^3/mgm/hr}{O_2\ mm^3/mgm/hr}$	R. Q. of excised cortex	R. Q. of brain *in situ*
Pigeon No. 1	$\frac{0.68}{0.89}$	0.76	
Pigeon No. 2	$\frac{0.88}{1.02}$	0.86	
Pigeon No. 3	$\frac{0.63}{0.96}$	0.66	
Dog	$\frac{1.13}{1.30}$	0.87	0.89
	$\frac{1.10}{1.33}$	0.83	
	$\frac{1.06}{1.39}$	0.76	

lactic acid,[3] the determination of the respiratory quotient of the cortex during B_1 avitaminosis is of importance.

Three pigeons and one dog were fed on diets deficient in vitamin B_1 and were studied after they showed definite signs of polyneuritis. The respiratory metabolism of the cerebral cortex of the pigeons was examined in the Warburg apparatus. The respiratory quotient of the brain of the dog was determined in 2 ways: (1) directly from the arterial-venous difference of CO_2 and O_2, and (2) the brain was then excised and studied in the Warburg apparatus. The results presented in Table I indicate respiratory quotients below unity probably caused by a diminished ability of the brain to oxidize lactic acid.

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Effect of Methylene Blue and Cyanide on Respiration of Cerebral Cortex, Testicle, Liver and Kidney.

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The respiratory metabolism of tissues of various organs was studied in the Warburg respiration apparatus. The tissues were suspended in a phosphate medium buffered at pH 7.4 with lactate as the

[3] Holmes, E. G., *Biochem. J.*, 1930, **24**, 914.