The effect of methylene blue on oxidations in the liver varied in different experiments. Five times, oxygen consumption decreased; once no change was observed and 5 times oxygen uptake increased. Cyanide, however, always diminished respiration and the diminution was reversed by methylene blue (Exps. 4 and 5).

6731

Effects of Methylene Blue on Respiratory Metabolism of the Rat.

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Methylene blue exerts definite effects in the metabolism of excised tissue.[1] It is therefore of importance to determine the action of methylene blue in the intact animal. The respiratory metabolism of 6 rats was studied by means of a Haldane open circuit apparatus after various periods of fasting. Then 0.5 cc. M/100 methylene

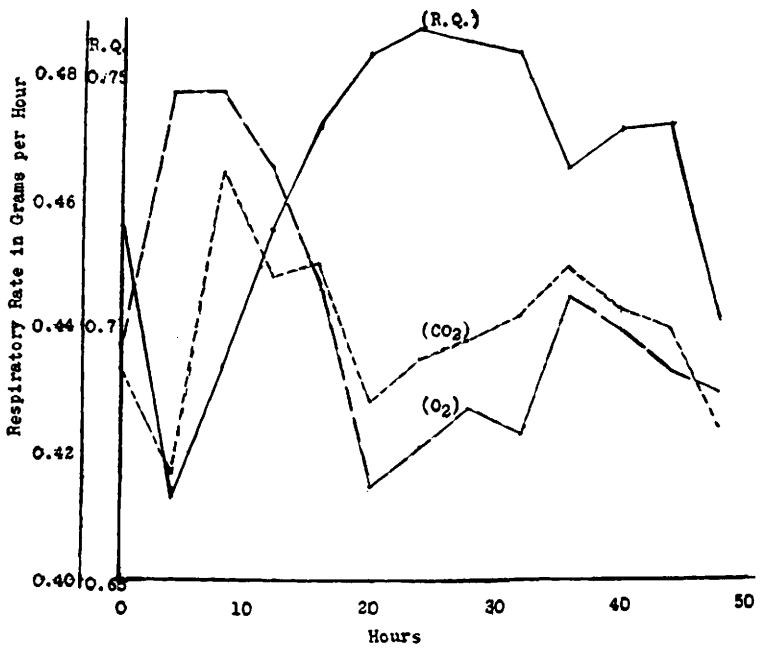

FIG. 1.

Effect of Methylene Blue. Composite of 4 experiments.

[1] Himwich, H. E., Fazikas, J. F., and Hurlburt, M. H., PROC. SOC. EXP. BIOL. AND MED., 1933, **30**, 904.

blue per 100 gm. of body weight was injected intraperitoneally. The CO_2 production and O_2 consumption were measured for varying periods during the following 48 hours. The results in all 6 animals bear a striking similarity. The composite graph depicts the observations of the 4 animals that were in the postabsorptive condition.

The graph discloses that there is a fall in the R.Q. which is followed by a subsequent rise. The early fall in the quotient is caused in part by a diminished production of CO_2 and partly by an increased consumption of O_2. The greater O_2 uptake indicates that the decreased production of CO_2 occurs despite an increased pulmonary ventilation. The fall of the R.Q. carries it to a value below 0.7 but the total R.Q. for the entire period of 48 hours in these 4 rats varied between 0.711 and 0.737.

6732

Effect of Methylene Blue on the R.Q. of the Brain in Situ.

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TABLE I.
Effect of Methylene Blue.

	R.Q. of brain	pH of arterial blood	Rectal temp. C.°	Sp. Gr.
Amytal	0.99	7.24	39.3	1.0653
MB 15 min.	0.77	7.25	39.8	1.0659
1 hr.	0.92	7.26	40.2	1.0673
1¾ hr.	0.54	7.27	40.7	1.0698

An early effect of methylene blue in the intact animal is to decrease the R.Q.[1] Methylene blue exerts a similar action on the R.Q. of excised cortical tissue of the brain[2] causing a decrease below the physiological value of unity.[3] This communication presents the results of preliminary experiments of the changes produced by methylene blue on the R.Q. of the brain *in situ.*

[1] Himwich, H. E., and Goldfarb, W., PROC. SOC. EXP. BIOL. AND MED., 1933, **30**, 906.

[2] Himwich, H. E., Fazikas, J. F., and Hurlburt, M. H., PROC. SOC. EXP. BIOL. AND MED., 1933, **30**, 904.

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