atropine is followed by a definite increase in intrapleural pressure. The effect seems quite prolonged, and in the case of epinephrin, does not become apparent until the action of the drug on blood pressure has practically disappeared. With broncho-dilatation, less resistance is offered to the movement of air in and out of the lungs and this seems to be accompanied by less suction on expansion of the chest.

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Effect of Emetine Hydrochloride by Subcutaneous Injection on Oxygen Consumption in Human Subjects.

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Pellini and Wallace[1] in their review of the pharmacology of emetine mention the cardiac depressant action of the drug with the resultant fall in blood pressure. Respiratory changes may also occur but were thought to be dependent upon circulatory failure. These workers noted in fasting dogs an increase in total nitrogen, urea nitrogen, and ammonia nitrogen following injections of emetine. These results were believed to be due to an interference with intracellular metabolism with an accompanying acidosis. No work appears in the literature on the effect of emetine on oxygen consumption.

We have attempted to determine the effect of emetine hydrochloride† in therapeutic doses on pulse rate and pressure, respiratory rate, and oxygen consumption in normal humans and in patients under treatment for amebiasis. Five medical students were selected as "normal" subjects and 3 clinic patients were used for study, 2 harboring *Entamoeba histolytica* and one with gall-bladder disease. The oxygen consumption tests were made with the Sanborn "graphic" apparatus by the closed method.

After a 15-hour fast period and after lying quietly for 30 minutes the patient's pulse rate and pressure, and respiratory rate were taken and oxygen consumption tests were made. Following this the drug

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[1] Pellini, E. J., and Wallace, G. B., *Am. J. Med. Sci.*, 1916, clii, 325.

† Ampoules of emetine hydrochloride containing 0.065 gm. (Eli Lilly and Co.).

was administered in total doses of 33 to 65 mgm. by subcutaneous injection. Within the hour following administration of the drug, other determinations were made on pulse, respiration, and oxygen consumption.

TABLE I.
Maximum Functional Changes During One Hour's Observation Following Subcutaneous Injection of Emetine HCl in Humans.

Subject	Sex	Age yrs.	Ht. cm.	Wt. kg.	Total Dose in mgm.	Resp. per min.	Pulse per min.	Pulse Pressure mm.Hg.	Oxygen Consumed in cc. per min.
H. S.	M	23	172.5	66.0	33	+2	—4	+10	+23
J. J.	M	21	160.0	56.0	33	0	—6	0	—10
H. A.	M	27	172.5	68.0	33	+4	0	+16	0
T. M.[1]	M	46	165.0	61.5	33	0	+3	0	—21
E. J.	M	22	175.0	66.0	65	0	+5	0	— 5
C. W.	M	26	165.0	61.0	65	0	0	— 6	—37
O. R.[2]	F	28	151.0	54.4	65	0	+9	—13	—20
T. M.[1]	M	46	165.0	61.0	65	0	0	0	—10
J. A.[1]	M	24	160.0	52.3	65	+2	0	—10	—19
J. A.[1]	M	24	160.0	52.3	65	0	0	0	— 5
J. A.[1]	M	24	160.0	52.3	65	+8	0	0	— 4
J. A.[1]	M	24	160.0	52.3	65	+2	0	0	—35
J. A.[1]	M	24	160.0	52.3	65	+5	0	0	+ 7
J. A.[1]	M	24	160.0	52.3	65	0	0	—12	— 6
J. A.[1]	M	24	160.0	52.3	65	+2	—4	0	+10
J. A.[1]	M	24	160.0	52.3	65	0	0	0	—15

[1] Infested with amoeba. [2] Gall-bladder disease.

Table I shows the results of this study. Sixteen experiments were made on 8 subjects. There was a significant fall in blood pressure in one subject, T.M., on continuous daily administration. Before treatment was begun his blood pressure was 134/90 and at the end of 10 days after having had 455 mgm. of emetine hydrochloride his blood pressure was 114/76. J.A. also exhibited a fall in blood pressure from 106/76 to 86/66 in 10 days after a total of 520 mgm. of the drug. His "normal" basal metabolic rate dropped from zero to —12 during this time.

Where a change occurred in respiratory rate it was increased. Changes in pulse rate were slight and inconstant. Pulse pressure dropped in 4 cases and was elevated in two. Oxygen consumption was generally lowered from 4 to 37 cc. per minute. In 3 cases increases of 7, 10, and 23 cc. per minute were noted. None of the subjects exhibited symptoms of nausea or vomiting following injections of the drug.

Summary: In 8 subjects on which 16 experiments were carried out a slight depression of oxygen consumption was noted following subcutaneous injections of therapeutic doses of emetine hydrochlo-

ride. Respiration was increased when affected. Changes in pulse rate were inconstant. A definite fall in blood pressure was noted in 2 instances when 455 to 520 mgm. were given over a 10-day period.

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The Formation of Lactic Acid Following the Administration of Glucose and Fructose.

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Campbell and Soskin[1] and Campbell and Maltby[2] have shown that the high R. Q.'s following the administration of dihydroxyacetone as reported by Himwich, Rose and Malev[3] could in great part be ascribed to "extra" CO_2 released from bicarbonate by blood lactic acid (blood drawn from arm vein) which parallels the rise in quotient. Campbell and his coworkers found that the increase in lactic acid follows fructose as well as dihydroxyacetone. On the other hand, aldose sugars such as glucose, galactose, etc., produce no such lactic acid changes. Inasmuch as the source of lactic acid arising from ketose substances has not been accounted for, we have undertaken a research in that direction. Simultaneous samples of blood from the portal vein, the hepatic vein, femoral artery, and femoral vein were drawn and analyzed for lactic acid and reducing sugar immediately before and at half hour intervals following the injection into the small intestine of 25 gm. of fructose in 125 cc. water, and in other experiments after 25 gm. of glucose. Amytal anesthesia was used.

At this time we wish to call attention to a rise of between 50% and 100% of lactic acid in the portal blood over and above resting values in all fructose experiments. Glucose brings about little, if any, change in lactic acid in the portal blood. In other words, lactic acid seems to be produced in the region of the abdominal viscera when fructose is given by way of the intestinal tract. The lactic

[1] Campbell, W. R., and Soskin, S., *J. Clin. Invest.*, 1928, vi, 291.

[2] Campbell, W. R., and Maltby, E. J., *J. Clin. Invest.*, 1928, vi, 303.

[3] Himwich, H. E., Rose, M. I., and Malev, M. R., PROC. SOC. EXP. BIOL. AND MED., 1926, xxiv, 238.