abolishes the unison but not the activity of the homolateral organs, while curarization or stimulation of one fails to influence the other. The synchronizing influence is therefore of central and not of peripheral (proprioceptive) origin.

Evidence indicates that the regions of motor outflow to the lymph hearts of the same side, in both larval and adult forms, are connected (Fig. 1, *b*) through an intraspinal pacemaker system effecting an exclusively homolateral coordination.

6198

Excretion of Lactic Acid in Sweat.

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The reaction, osmotic pressure and volume relationship of the body fluids are closely dependent on the properly regulated acid-base equilibrium. Under normal conditions 800 to 1000 cc. of fluid are lost through the skin in 24 hours; while under special conditions such as athletic contests, heavy work such as mining, etc., this may be increased to as much as over 3 liters per hour. Even under normal conditions there is a much greater amount of acid claiming excretion than fixed base taken in. During exertion this lack of balance between fixed base and acid catabolites is augmented and some regulatory mechanism is essential if the fixed base depots of the body are not to be abnormally drained. We have attempted to investigate how some of these regulatory devices operate to conserve base within the body during the excess sweating which takes place in patients whose temperature is raised to high levels for therapeutic reasons. These patients are taken at random and subjected to this therapy for causes as varying as acute gonorrheal infections, paralysis, psoriasis, etc., so that the results obtained are probably generally applicable and not due to the specific pathological condition.

The base economy factor of the skin will depend on its ability to produce a fluid of lower pH than the blood plasma which acts as the carrier of the catabolic products. The sweat as collected from the surface of the entire body at intervals after the temperature of the patients has been raised showed a pH of about 4-4.5. It is a known fact that athletes complain of "stinging sweat". The pro-

duction of an acid that could be eliminated un-ionized to a low degree at the pH of sweat would result in a great sparing of base. We have found comparatively large quantities of lactic acid in the sweat of these patients. From a study of the dissociation constant of lactic acid it is apparent that at the pH of sweat lactic acid is approximately 50% ionized and hence can be secreted undissociated with the consequent sparing of base, especially of potassium. At the pH of sweat the buffer action of the lactates in the presence of an equivalent amount of lactic acid is at a maximum, thus preventing the fall of the pH of the sweat to harmful levels. A patient loses 2.5-5.0 liters of fluid during a treatment, excreting 250-300 mg. of lactic acid per 100 cc., which means a total excretion of as much as 15 gm. of lactic acid. Snapper and Gruenbaum[1] found that athletes excrete large quantities of lactic acid during races. Lactic acid was determined by the method of Clausen.[2]

A patient whose temperature was raised to 106° was found to have lost approximately 4 liters of fluid, exclusive of 122 cc. of urine. Certain of the chemical constituents of the blood and sweat are given in the following table.

TABLE I.

Constituent	Blood Before	After 3 hr.	Sweat After 1 hr.	After 3 hr.
pH	7.45		4.15	4.12
CO_2	61.2	57.2	12.4	13.4
Lactic acid	21	72	216	254
Na	353	316	140.8	178
K	19	21	36.9	35.5

(All quantities with the exception of pH are mg. per 100 cc.)

6199

Some Differential Reactions in the Colon-Aerogenes Group of Bacteria.

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Two distinct subgroups are generally recognized in the colon-aerogenes group of bacteria: the genus *Escherichia* which grows poorly if at all on citric acid, is acid to methyl red (M.R.+), does

[1] Snapper, I., and Gruenbaum, A., *Bio. Zeitschr.*, 1929, **206**, 319.
[2] Clausen, S. W., *J. Biol. Chem.*, 1922, **52**, 263.