based on physiological principles, applicable to cows secreting milk poor in non-fatty solids, may be evolved.

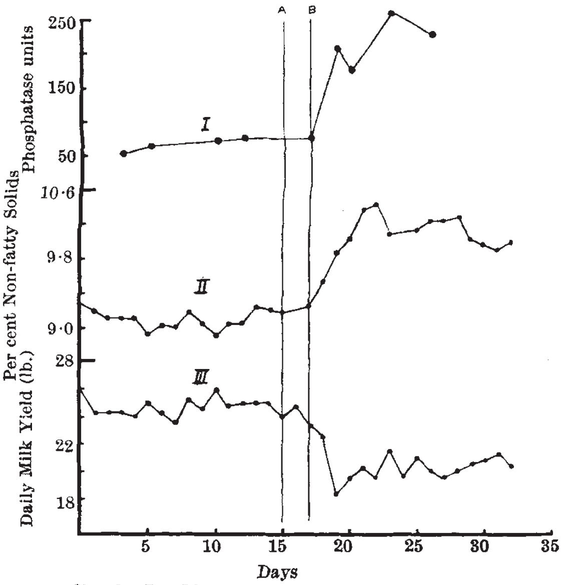

FIG. 1. I. Milk phosphatase concentration.
II. Per cent non-fatty solids in milk.
III. Daily milk yield.
A–B, injection period.

The results of this experiment confirm the suggestion from previous work[3] that the secretion of milk fat is a process not very closely related to the secretion of other milk solids, since in the dose given, œstrogenic hormone had little effect on the fat content of the milk. The percentage drop in the total daily secretion of milk fat caused by the experimental treatment was therefore far greater than the percentage fall in the daily secretion of non-fatty solids. A point of further interest, in view of the inverse relationship known to exist throughout lactation[4] between milk yield and milk phosphatase concentration, is the striking increase in the latter quantity following œstrogenic hormone administration.

These experiments, which are being extended, will be reported in detail elsewhere.

S. J. FOLLEY.
National Institute for Research in Dairying,
Shinfield, Nr. Reading, Berks.
April 3.

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Inhibition of the Pasteur Effect

AN explanation has been offered[1] for the action of potassium salts[2,3] in inhibiting the Pasteur effect and in increasing the respiration of brain. It was suggested that normally in oxygen only part of the cell-enzymes which attack carbohydrates are accessible to their substrates, and that respiratory energy is responsible for the maintenance of this inaccessibility; in anærobiosis the enzymes are supposed to be fully accessible. Potassium salts affect the cell-enzymes so as to make them fully accessible.

It is now suggested that the reason why this potassium effect is only observed in brain cortex[3] is because in this tissue the metabolism is mainly located in the superficial dendrites and not in the interior of the cell (as indicated by the work of Holmes[4]). In other cells the ionic concentrations at the actual site of metabolic activity cannot be altered so readily by artificial methods.

It would seem that other inhibitors of the Pasteur effect (for example, dinitro-*o*-cresol[5,6] and phenosafranine[7]) act by inhibiting a small specific fraction of respiration which is responsible for the Pasteur effect. There is thus a primary inhibition of the specific fraction of respiration which maintains the partial inaccessibility of the respiratory and glycolytic enzymes. The enzymes become fully accessible and there results a secondary rise both in glycolysis and respiration. The net effect on the magnitude of the respiration is determined by how much of the initial respiration is eliminated; this no doubt depends on the nature and concentration of the inhibitor. The sign of the net effect on the respiration is determined by whether the initial inhibition or the secondary augmentation is the greater.

It is thus possible to have either an increase, or a decrease, or even no net change in respiratory rate accompanying this inhibition of the Pasteur effect. There is, however, a qualitative change in the respiration, since the fraction which causes the Pasteur effect has been eliminated. This specific fraction of respiration is more susceptible than the rest. Thus low concentrations of cyanide can cause inhibition of the Pasteur effect without any fall[8], or even with a rise[9,10] in respiration, while higher concentrations of cyanide cause a net diminution in respiratory rate together with inhibition of the Pasteur effect.

The theory of mechanism earlier advocated[1] can thus well explain inhibition of the Pasteur effect as well as the observed respiratory changes which accompany this inhibition.

KENDAL C. DIXON.
Sir William Dunn Institute
of Biochemistry,
Cambridge.
March 19.

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Host Density and the Success of Entomophagous Parasites

THE subject of this communication is the effect of the density of a host population upon the relative success of a searching female parasite. So far as I am aware, this has not received any prior experimental treatment. Smirnov and Wladimirow, as reported by Gause[1], have demonstrated a relation between the increase of a parasite population and the concentration of the host, but this is a problem distinct from the present one although similar in nature.

The area which must be traversed by a female parasite searching for a host depends upon the concentration of the host. If the density of the host within a given area is reduced, then it seems obvious that the distance to be covered by the female before