lungs yielding pure cultures of the organisms fed. One of the adult pigs that suckled the young pigs also died of this type of pneumonia.

The fact that the child when taken from the mother's breast quickly recovered, also points to the conclusion that the mother herself was the infecting source, and that in order to control such infection careful isolation of both mother and child is essential. The mother may harbor the organism in the milk with clinical symptoms that are so little noticeable as to be mistaken for something else, quite insignificant in nature. The freedom from mastitis in this case suggests that the organism lived a commensal existence in this menstruum.

265 (2225)

Water retention in the body.

By W. R. BLOOR and R. G. FREY.

[*From the Laboratories of Biochemistry of the University of California, Berkeley, Calif.*]

This study was undertaken with the purpose of getting some information on the factors influencing water retention in the human body particularly with regard to food substances. Experiments were conducted on medical students of the University, during the late winter which in Berkeley is well adapted to experimentation of this kind since there are long periods of almost constant temperature (about 65° F.) and humidity (75 per cent.) and the laboratories are not heated. Diet was controlled and constant. No liquid was taken after 6 P. M. the night before, breakfast consisting of one egg and a slice of toast with no liquid was eaten at 7:30 A. M. and no luncheon was taken. Urine was voided at 8 A. M. and the first sample collected at 9 A. M. after which one liter of water or the experimental solution was taken and urine samples collected at hourly or half-hourly periods for three or four hours after the diuresis had apparently ceased. Determination of volume, specific gravity, total nitrogen and chlorides were made and the results of sev-

eral experiments of each kind on eight students were briefly as follows:

Water alone. An increased output of urine was noticeable in 30 minutes, reached a maximum in from one to one and one-half hours and was over in four hours. Chloride excretion was irregular but in general fell as the water excretion increased. Two maxima of nitrogen excretion were noticeable—the first about 10 A. M. and the second about 2 P. M. which is noteworthy in view of the fact that no lunch was taken, indicating apparently the influence of habit.

Water and Cane Sugar. No noteworthy effect on the water output was noted until amounts of sugar of over 150 grams were given. With 180 gms. of sugar the increased urine output began and reached approximately the same maximum at the same time as with water alone but decreased much more rapidly reaching the same low point about an hour sooner but showing a *second* moderate maximum at from one to two hours after the first low point. By the end of another hour the output was back to the low (normal) level again, indicating a retention of water by the sugar.

The nitrogen excretion showed the same two maxima as when water alone was given while the chloride did not fall as rapidly as with water alone.

A few experiments were made to determine the amount of salt necessary to cause complete retention of a liter of water for a period of five or six hours. In general about 14 grams of NaCl was found to be necessary.