roid gland eight grains per day for three days, with no evidence of diminution in the amount of fluid in the chest. Thyroxin, 1/6 mg., was given every three hours for the next three days with no change. She was again put on dessicated thyroid gland for four days more and now there was just a slight diminution in the pleural exudate. This difference, however, was probably spontaneous and not due to the thyroid therapy.

SUMMARY

Three cases of pleural effusion were treated with thyroid substances and showed a distinct tendency to rapid absorption. These were the effusions accompanying pneumonia, the so-called parapneumonic effusions. One case of primary pleural effusion, probably tubercular in nature, was not affected by thyroid administration.

Further observations will be necessary to determine which type of effusion in the pleura may be influenced by thyroid administration, also whether it is the individual (hypothyroid?) or particular type of effusion etiologically, that can be affected by thyroid administration.

155 (2387)

On the coagulation of milk by rennin.

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The effects of various salts on the coagulation time of milk by rennin have been studied. It was found that $CaCl_2$, $MgSO_4$, and NaCl in certain dilute solutions favor coagulation (shortening the coagulation time), in other more concentrated solutions counteract it.

The coagulation of milk by rennin is sometimes spoken of as a precipitation of the hypothetical caseinogen by calcium salts. That it is not a true precipitation reaction is shown by the above mentioned action of salts. These to the same extent as they favor the stability of the milk colloids also favor coagulation,

and vice versa; in other words, to the extent salts increase or decrease the surface charges of the colloids they act as coagulants or anti-coagulants. The effect of salts on the surface charge is expressed by the well-known equation:

$$\text{P. D.} = \frac{58}{2} \log \left(1 + \frac{z}{y} \right)$$

where z stands for ions in combination with the colloids, y for the same ions in the medium.

A condition under which an increase in the surface charges would favor the cementing together of the colloids may occur if colloids with the opposite surface charge make their appearance, in this case colloids which in Loeb's terminology can be written $R_{COOH}^{NH_2}$. Some calcium compounds are of that nature because they have their isoelectric point far toward the alkaline side. Calcium caseinate has, according to Loeb, its isoelectric point at pH 10.53.

If such a calcium compound plays a rôle in the clotting of milk by rennin it follows that clotting should not take place if the milk is more alkaline than 10.53. This test applies only to the last stage of clotting. In order to let the first stage take place undisturbed by alkalies and to prevent the last stage from occurring until the desired alkalinity had been obtained, the following procedure was adopted: the rennin was added to the milk after the calcium of the milk had been precipitated by oxalate (Morgenroth's method). After allowing about 5 minutes for the enzyme action, the H ion concentration of the milk was brought near the desired value and calcium added. It was found in this way that the last stage of clotting would not occur unless the milk was more acid than about pH 10.

The first stage of clotting, *i. e.*, the enzyme activity, does not take place at a pH more alkaline than 6.9. This is not due to a destruction of the enzyme by alkalies, because it was found that in the concentration used in these experiments rennin could be kept at a pH of 8.2 one hour and still, if neutralized, cause coagulation.