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group are constituted, can, on an emergency, contribute matter for the maintenance of warmth. It is not, however, their legitimate duty, and when it is performed by them it is done at a sacrifice of economy.

182. Before we proceed to notice the economical use of food it will be desirable to outline in a very brief manner, the very important **changes which food has to undergo**, before it can be utilized for the purpose of animal life. For this purpose we will take cattle as the basis of our comments. A bullock has four stomachs, of which the first, which is known as the rumen, is the largest of the series; it is simply used for receiving the fresh gathered food. Whilst the food remains in this stomach, it receives moisture from the **saliva**, which is passed down the gullet from the salivary glands which secrete it. The structure of this stomach keeps the food gently moving, and thereby assists the softening of the food, and the general action of the saliva. The preparation thus commenced in the first stomach, enables the food to pass into the second stomach, and as soon as the animal is prepared to ruminate the food, or as it is commonly called, "chew the cud," the food passes again into the mouth, for the purpose of being more thoroughly masticated or chewed.

183. This **mastication** has to accomplish two distinct objects, it has

To reduce the food into a fine condition, and also  
To bring it under the action of the saliva.

It is necessary that the food should be reduced to a very fine condition, in order that every portion of it may be the more perfectly acted upon in the process of digestion. By digestion we mean that action upon the food, which prepares it for being taken up in the blood, and thus contributing to the growth of the animal. But this mastication has also the duty of securing the full action of the saliva upon the food. This