specialized in groups to do some one particular thing-the salivary cells create saliva, the muscle cells contract, the excretory cells pick out waste substances from the blood and so on. But this specialization does not signify that each cell does not perform its own vital processes in addition to its specialty. The fact that it remains alive and works means that the complex chemical components of its body substance or protoplasm are constantly being reduced to simpler compounds which are expelled, while new protoplasm is built up from the sapply of food material brought by the blood. This double process of destruction and reconstruction is known as metabolism, while its two phases, the breaking-down process and the building-up process, are known as katabolism and anabolism, respectively.

Now, while all the cells of the body must have nourishment, none of them, except those of the alimentary canal is capable of utilizing the raw food materials that an animal obtains in a state of nature. These materials must therefore be changed into some other form in order that they may be assimilated by the cells. This change is called digestion.

The single cell composing the body of a Protozoan, living free in nature, digests its own food and then assimilates the products of its own digestion. But of the cells constituting the body of any multicellular animal, only those of the alimentary canal are capable of digesting raw foodstuffs, and, moreover, as digestion is the specialty of these cells, they have also to digest the food for all the other cells of the body.

The two most important changes that must be brought about in the natural food by digastion are those which make it soluble in the blood and which render it capable of passing through animal tissues. In the first place, the food must diffuse through the walls of the alimentary canal as a liquid which mixes with the blood, for there are no pores or openings of any sort from the alimentary canal into the body cavity; and in the second place, it must pass through the walls of the cells themselves. The digestive changes result chiefly in a breaking down of the complex molecules of the raw food materials into more simple chemical sub-These are taken up by the cells and reconstructed into complex protoplasmic molecules which can not escape through the cell membrane until they are again broken down into simpler forms.

The waste products of the cells consist principally of carbon, hydrogen and nit rogen. These are converted by the oxygen supplied by the respiratory system into carbon dioxid, water, and compounds of urea. The first being a gas, mixes with the air in the tracheal tubes and so reaches the exterior during exhalation. Much of the water is also given off through the tracheal system in the form the thorae after the bases of the means of warer which exhales from the spirades. In the dame there are the contracted to the contracted traches are converted by the oxygen which exhales from the spirades. through the tracheal system in the form the passes of the me of vapor which exhales from the spiracles, but, since insects are covered by their ite different appearance hard chitinous shell, it is probable that they do not "sweat." The compou do asso of very small follicles urea, and probably also some water, as inute ducts and flattened separated from the blood by the exert sterior walls of the head. ory glands, called Malpighian tubules in this gland in the drone insects which empty their products had ard on each side against into the alimentary canal, whence the ten the compound eye and are discharged with the fæces from the as occupying the position intestine.

Digestion is brought about by sub stances called enzymes which are col tained in the various liquids mixed with the food in the alimentary canal. Thes liquids are secreted by the salivary gland and by the cellular walls of the stomach

The Salivary Glands

The opening of the salivary duct the base of the probiscis has already bet described. The true salivary glands, those corresponding with the salivat glands of other insects, are arranged two pairs, one situated within the less and the other within the thorax. four ducts unite into one median t which enters the base of the labium

opens upon the upper surfa arge and conscpicuous gla in the anterior and upp head and opening into th e described later in conn rgan. They are spec ands in no way homole alivary glands of other i y many supposed to sec ood instead of a digest

The salivary glands of gain broken down into simpler forms. The salivary glands of The waste products of the cells consist on No. 2 of Cheshire, post andibular gland in the wo queen. There is also a p gular mass of glandular c me situated just above the s been described by Bord eparate gland opening by the esophagus just rynx. The writer, howev erly unable to discover any ngh two suspensorial ligar erior end of the œsophagus the wall of the head at t s of these glands, and mig taken for ducts. These ds" of Bordas, moreover simply detached lobes of bral glands. They are pro