

be converted into fat, yet this transformation is made more easily if ready made fat be present, and it exists in large quantities in various forms of food. The most widely distributed form of fat is *elain*, which constitutes nearly eighty per cent. of olive oil. Its formula is calculated at $C^{56} H^{56} O^4$. It is generally met with as *elaic acid*, and as such, or as a soap, is received into the blood. Next in abundance to *elain* is *margarin*, which constitutes sixty-eight per cent. of butter, and enters largely into the composition of all solid fats. Its formula is $C^{58} H^{58} O^4$.

Stearine is much more rarely met with; it is found in mutton suet and cocoa. Its formula is $C^{57} H^{57} O^4$.

The last member of this group which is of any importance in a dietetic point of view, is *Butyrine*, which is a constant constituent of milk, although it is in the small proportion of two per cent. It is readily decomposed. Its formula is $C^{44} H^{44} O^4$.

The above group, as will be perceived, abounds in carbon, and yet the demand for this element is so large, both for the purposes of respiration, and to form the many carbonates that exist in the body, that besides the contributions derived from the various forms of fat, a considerable amount is afforded by various acids, which constitute the third and last non-nitrogenous group.

The most important of these are the *oxalic*, *malic*, *citric*, *tartaric*, *acetic*, and *lactic*. All these acids are very similar in atomic constitution, consisting generally of four atoms of carbon, two of hydrogen, and from three to five of oxygen. The formula of lactic acid deserves more specific attention, for it is readily formed from grape sugar, it stands thus: $C^6 H^5 O^5$. As this acid is found, in combination with alkalies, it is probable that it passes unchanged into the blood. As also the *acetic*, for it is met with in the perspiration, although in small quantities, and, no doubt, much the largest quantity of the *acetic acid* we use, is changed into carbonic acid and water. All the acids we have enumerated are readily decomposed, and form new com-

binations with the various complex bodies they encounter in the blood. It would be out of place here to attempt to follow their chemical progress, and we shall now proceed to the more interesting task, of describing the progress by which the most important members of the non-nitrogenous groups are adapted for the various offices they have to fulfil in the state corporeal.

Let us first pursue the history of starch, which enters so largely into most vegetable diet, from its entrance into the mouth, to the transformed existence it presents in the blood.

When food is taken into the mouth, there is, or ought to be, an immediate flow of saliva from the various glands connected with that cavity. The action of this saliva upon starch is very remarkable, as it gradually converts it first into dextrine, and then into sugar. Digestion then begins in the mouth, and from this important fact, too much lost sight of, we may deduce several dietetic rules. The first that occurs is an old adage, that food "well chatted is half digested"—a curious example of the popular instinct anticipating the scientific discovery, for it is literally true, the chatting during a meal prolongs the process of mastication, and has also the effect of conveying the requisite amount of nervous influence to the salivary glands. No part of the system is more under the influence of the emotions than these organs. "The mouth waters for dainties," is a literal fact. The sight and smell of food make the mouth weep in pleasurable anticipation of the "sweet morsel" it will soon "roll under its tongue." How exact is this description! While gaiety thus improves what we may call the oral digestion, fear and anxiety exercise as powerful an effect in the opposite direction. The dryness of the mouth is a symptom of terror, suggesting the expression, "*vox faucibus hæret*," or the tongue cleaves to the roof of the mouth. In India a thief is detected by desiring him to chew rice in his master's presence; the saliva will not flow from fear, for "conscience doth make cowards of us all," and the thief