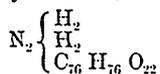


form a useful addition to the means of thickening soups, etc., in the kitchen. 3rd. By mixing 10 per cent. with the water supplied to boilers, a calcium deposit is formed, which may be easily blown off, thereby preventing troublesome incrustations. 4th. Mixed with gelatine it may replace gum arabic in the manufacture of lozenges and jujubes.

Alginate acid may be separated from its sodium salt by means of hydrochloric acid; a little bleach will render it white, and it may be separated by filtration and pressure and obtained in the form of a cake, in which state it can be kept for any length of time in a cool, dry place.

Analysis of the alginates shows that the formula of the acid is $C_{76} H_{80} N_2 O_{22}$ which may be written thus:—



as a diamide.

It is a nitrogenous acid, extremely retentive of water, taking up over 98 per cent. and it dries up to a horny substance resembling albumen, with a s. g. of 1.534 (the s. g. of ivory nut is only 1.376) in which state it can be turned and polished. It is easily obtained in thin transparent sheets, which possess considerable tenacity and in this form it is useful for tying over pots and jars. The sheets may be readily coloured blue, red, &c., resembling the coloured sheets of gelatine, but unlike them are not affected by water. Alginate acid is a moderately strong acid, displacing carbonic acid from the alkalis and earthy carbonates. The soluble alginates (sodium, potassium, ammonium, lithium and magnesium) have all an acid reaction. Some of the insoluble alginates are very soluble in ammonia, with which they seem to form double salts.

The aluminium alginate, for instance, is very soluble in ammonia, but becomes when dried again insoluble, and forms a cheap water varnish, and an efficient glaze for paper and cloth. It is quite neutral.

Shellac is dissolved by the alkaline alginates, the ammonium solution, when evaporated, forming a thin, tenaceous film, quite soluble in water, but which after being passed through a bath of dilute hydrochloric acid is insoluble. The compound then resembles sheet gutta-percha, and it is thought might replace that substance for surgical dressings. Remembering the great brittleness of shellac, which destroys its value for many purposes, no one would suspect its presence in such quantity in this very pliable sheet.

Many other resinous bodies may also be incorporated in a similar manner with a soluble alginate and then rendered insoluble.

Alginate acid also combines with many alkaloids, forming soluble films, some of which may be useful in medicine, but none have as yet been fully investigated. Compounds have been obtained and exhibited by Mr. Stanford of alginate acid with quinine, chinoline &c., about which he promises further reports.—*Journal Soc. Chem. Industry.*