other spots than that of mannose could be detected. Mannose phenylhydrazone (m.p. 199°) was obtained in nearly the theoretical yield[6]. When oxidized with periodate 0·96 mole of it was consumed and 0·125 mole of formic acid was produced per unit ($C_6H_{10}O_5$) of the preparation from *Codium*. Assuming a straight-chain structure with 1,4 linkage the yield of formic acid indicates a degree of polymerization of 16.

These results, taken together with the resemblance in specific rotation to the mannan of ivory nut (− 44·1°) and salep (− 35·0°), both of which are known to be β-1,4-linked, would indicate that the mannans from *Codium*, *Acetabularia* and *Halicoryne* are constructed in a similar manner.

Other *Codium* species such as *C. latum* and *C. tomentosum* also contain mannan as main cell-wall constituent, whereas in *Udotea*, *Chlorodesmis* and *Halimeda*, all of which are usually included in Codiaceae, mannan is replaced by xylan with β-1,3-linkage.

The significance of these findings in connexion with phylogeny and taxonomy will be discussed elsewhere.

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BIOLOGY

Attrition of Incisors of Grazing Sheep

UNDER New Zealand conditions of sheep-farming, incisors of grazing sheep wear much more rapidly on improved pasture, chiefly ryegrass (*Lolium perenne*) and white clover (*Trifolium repens*), than on the finer native pastures of low carrying capacity. The cause is not nutritional in the generally accepted sense, however[1]. It would rather seem that certain substances in the herbage of 'improved' pastures dissolve the teeth, the process being aided by the abrasive action of the plant fibre. Wear is also increased in mouths with certain undesirable anatomical characteristics which appear to be hereditary in origin.

Differences in chemical compositions of enamels and dentines of sheep's teeth of various breeds and from farms on country of dissimilar soil types are not correlated with the extent of tooth wear[2].

The thin layer of enamel on the incisal surface of sheep's teeth is worn through approximately two months after eruption, hence the problem is concerned with the rate of wear of primary dentine and, at a later stage, secondary dentine.

Electron micrographs of the biting edge of worn incisors showed that the dentine surface was subjected to both chemical and abrasive action. The chemical action was thought to be due to the organic compounds in the herbage complexing the calcium phosphate (apatite), but before this could be checked by studies with the electron microscope it was essential to understand the microstructure of the organic and inorganic components of dentine more fully[3] and to develop a technique which enabled the intensity and nature of etching to be recorded (Hall, D. M., unpublished work). Experiments were then made to compare the etching produced by fractions of juices of pasture plants on surfaces of fresh dentine polished smooth by metallographic techniques. The fractions examined were: (1) organic acids from herbage at their original concentrations and *p*H (6·0–6·5) for chelating action on the calcium; (2) cell fluids, obtained by ether cytolysis, containing in addition sugars, inorganic and organic phosphates, amino-acids and polypeptides, capable of chelating or dissolving calcium; (3) freshly expressed juices of grasses and clovers containing enzymes in addition to substances of (1) and (2).

These studies have shown that fraction (3) produced the strongest etching, and indicated that this reaches a maximum during the lush spring growth. It was also evident that the central non-calcified core of the odontoblast process was etched by fresh grass juice at a faster rate than the dentinal matrix and thereby released long lengths of the membrane-like sheaths enclosing the process.

The results indicate that the majority of the etching is due to proteolysis and that such weakening of the bonding material of the tooth would facilitate its wear by attrition. Rouiller has observed that an organic component bonding the particles of dentine is digested by plant proteinases such as papain[4,5]. It is considered, therefore, that the digestive action of the proteinases of actively metabolizing leaves on the organic components of dentine could be an important factor contributing to the wear in teeth of grazing sheep.

This investigation is being continued.

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Rhizosphere Effect on Soil Algae

VERY few studies of the effect of the rhizosphere on soil algae have been made in the past[1], and in a recent review Starkey[2] states that it is possible that algal populations may even be decreased in the root zone. This communication presents evidence for a well-marked rhizosphere effect on soil algae by the roots of cultivated tea plants nominally referable to the Assam variety of *Camellia sinensis* (L) O. Kuntze.

Roots from one-year old seedlings were removed from the nursery beds and the soil from the top 5 cm. of the roots was scraped off with a sterile spatula. The top 5 cm. of soil from adjacent bare areas of the same bed was used as the control. Modifying the method described by Agnihothrudu[3], 5 gm. each of