cell-antigens. In fact, there does not apparently exist any such 'recognition' at all; instead the effect of lymphocytes in the delayed type responses, especially in transplantation immunity is a particular case of their normal morphogenetic function[1].

The major function of lymphocytes consists in maintaining a constant level of differentiation of cells in various tissue systems by means of continued transmission of morphogenetic information.

In a similar way they transmit such information to a homograft. But in homotransplantation immunity there occur immune lymphocytes although the question is still open whether or not these cells result from instructive transformation or from clone selection.

Immune lymphocytes carry 'anti-information' to antigens of the grafts, that is, a system controlling complete or partial synthesis of protein anti-determinants to the graft antigens. Realization of this synthesis is unnecessary. Immune lymphocytes transmit this anti-information in the ordinary way both to normal tissues of the organism and to cells of the homograft. For normal body cells it is immaterial whether or not individual parts of the template received from lymphocytes can secure synthesis of a protein with anti-determinants to cell antigens of another strain of mice. As to the graft which consists of cells of this other strain of mice, incorporation of such anti-information is fatal.

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Purification of Algal Cultures with Caffeine

Ducker and Willoughby[1] have suggested a method for eliminating bacteria from algal cultures. If a technique could be devised for selectively killing fungi and non-photosynthetic protozoa, the selection of pure strains of algae would be considerably simplified.

I have observed that when algae are raised on salt media they are remarkably resistant to caffeine. Concentrations of 0·01–0·03 M kill the fungi and non-photosynthetic protozoa and, if anything, stimulate the algae. In reconstitution experiments and wild isolates I have succeeded in eliminating from cultures of *Euglena* and *Chlamydomonas* contaminants including species of *Aspergillus*, *Penicillium*, *Saccharomyces* and *Paramecium*. This worked in various media including pond water, pea infusion, modified Cramer-Myers salt medium[2] and Beijerinck's mineral medium with acetate[3]. The fungi were not killed in '*Euglena* medium'[4] or the enriched medium of Gibor and Granick[5], possibly because of the adenine content.

This method is not invariably successful; *Scenedesmus*, for example, is considerably more sensitive than *Euglena*. It should, however, be included among techniques to be tried in case of necessity.

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Oxygen Diffusion from the Roots of Some British Bog Plants

SEVERAL workers have shown that the roots of various plants are able to oxidize an anaerobic medium. With rice, van Raalte[1] was able to demonstrate that one oxidizing agent responsible was probably oxygen itself. Coult and Vallance[2] also showed that oxygen diffused from the sub-aerial parts of *Menyanthes trifoliata* L. into an anaerobic solution.

More recently, and concurrently with the work given in this communication, van Raalte *et al.*[3], using a 'polarographic' technique, have shown that oxygen diffuses from the roots of barley grown in anaerobic solutions.

The results presented here were also produced 'polarographically' using platinum versus saturated calomel electrode, the oxygen diffusion being measured in μamp. The platinum electrode is in the form of a small cylinder coated on the outside with 'Araldite', the reactive surface being on the inside.

The roots of the experimental plant are inserted with the electrodes into a deoxygenated solution, which is then 'sealed' with paraffin oil. At this stage a root can be inserted into the cylinder electrode, and a manual 'polarograph' taken, a 60-sec equilibration period being allowed for each reading. (Note that the plateau current is directly proportional to the oxygen diffusion.)

If the aerial parts are placed in an atmosphere of nitrogen, or cut and sealed with 'Vaseline', the oxygen diffusion from the root drops immediately. The minimum diffusion eventually recorded corresponds to the residual current[4] (Fig. 1). Further, if after a prolonged period the nitrogen is replaced by air or oxygen, or the aerial parts re-cut below the 'Vaseline' (zero time, Fig. 2), within 2 min oxygen again diffuses from the root. This latter observation is in agreement with the work of Barber *et al.*[5], who found that $^{15}O_2$ travelled down from the aerial parts of rice to the root tip in a similar time.

It has been found with *Eriophorum angustifolium* Honck. that, if air or nitrogen is replaced by oxygen, the diffusion rate from the root increases to five times that produced with the aerial parts in air (Fig. 1).

Moving the electrode farther up the root has shown which regions of the root are concerned in the release of

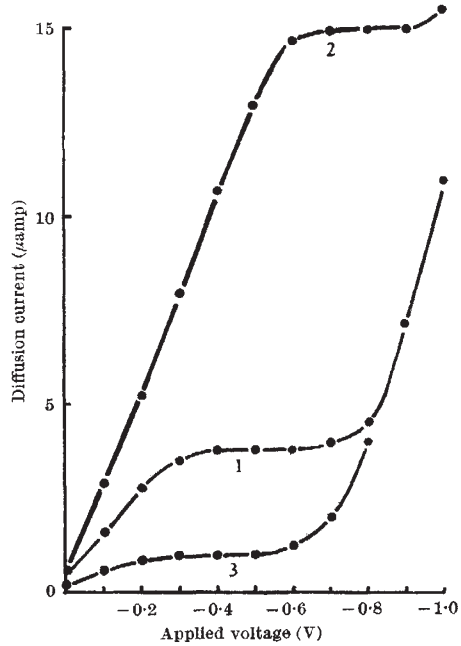

Fig. 1. *Eriophorum angustifolium*. (1) Oxygen diffusion round the root tip; aerial parts in air; (2) oxygen diffusion round the root tip: aerial parts in 100 per cent oxygen; (3) oxygen diffusion round the root tip ≡ residual current: aerial parts in 100 per cent nitrogen