Recently a pure perennial ryegrass pasture at Palmerston North has caused facial eczema in sheep. Samples of these pastures supplied by Butler[7] have proved positive to the 'beaker test', and it is of considerable interest that direct microscopical examination of the surface of these leaves confirmed the presence of many *Sporidesmium* spores. A culture of *S. bakeri* has since been obtained from this material by direct hyphæ isolation.

These observations indicate that the substance giving the 'beaker test' reaction is contained in the spores of *S. bakeri*. E. P. White (personal communication) has confirmed this by isolation of the material with m.p. 260° C. in an impure state from cultured spores. An investigation is being carried out to determine whether this fungus also produces the toxin.

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Composition of the Nucleic Acids of Some Algae

As part of a study on the chemical composition o algae[1], the composition of the nucleic acids of various algae was investigated in order to determine whether there were differences between different groups of marine and freshwater forms. The following algae were studied: the freshwater diatoms *Navicula pelliculosa* (Bréb.) Hilse and *Nitzschia palea* (Kütz.) W. Sm.; the marine diatom *Cylindrotheca gracilis* (Bréb.) Grun.; the freshwater blue-green alga *Anacystis nidulans* (Richt.) Dr. and Daily; and the freshwater green alga *Chlorella pyrenoidosa* Chick.

The algae were grown in sterile culture. The flasks, containing 1·5 l. of suitable medium, were kept in a temperature-controlled room and illuminated from below with daylight fluorescent light. The algae were harvested every ten days to two weeks by centrifugation. *Navicula pelliculosa* and *Nitzschia palea* were grown at 22° C. in modified Chu 14 medium[2], illuminated intermittently and aerated. *Cylindrotheca gracilis* was grown in sea-water with a salinity of 17,000 p.p.m. with the addition of Ketchum and Redfield's medium[3]; a mixture of air and 2–5 per cent carbon dioxide was bubbled through the flasks. *Chlorella pyrenoidosa* was grown in modified Bristol's solution[4], illuminated continually and aerated with the air–carbon dioxide mixture. *Anacystis nidulans* was grown at 36° C. in Kratz and Meyers's medium[5], continually illuminated and aerated with the air–carbon dioxide mixture.

For the isolation of the nucleic acids and their separation into ribonucleic acid and deoxyribonucleic acid, the method of Ogur and Rosen[6] was used. Ultra-violet absorption spectra of all fractions were determined, and paper partition chromatograms were prepared. The most successful solvents were acidic butyl and propyl alcohol mixtures (*n*-butyl alcohol 77: formic acid 10: distilled water 13; or *iso*-propyl alcohol 68: concentrated hydrochloric acid 17·5: distilled water 14·5). Ribonucleic acid and deoxyribonucleic acid were hydrolysed with 3 *N* perchloric acid for 1½ hr. at 100° C. After determining their ultra-violet absorption curves, the hydrolysed samples were cooled in an ice-bath, neutralized with an ice-cold saturated solution of potassium hydroxide, filtered to eliminate the potassium perchlorate, concentrated *in vacuo*, and chromatographed. The purines and pyrimidines were eluted with 0·1 *N* hydrochloric acid according to Wyatt[7], and their amounts determined spectrophotometrically.

Repeated isolations and determinations of the ultra-violet absorption spectra of ribonucleic acid and deoxyribonucleic acid from all the organisms mentioned above showed no significant variations from the typical preparations of these acids from other sources. Samples of ribonucleic acid from all organisms showed the presence of the following purines and pyrimidines: cytosine, uracil, adenine and guanine. Cytosine, thymine, adenine and guanine were found in deoxyribonucleic acid. 5-Methylcytosine could not be detected in any of the algae studied. The quantitative data on the deoxyribonucleic acid from the algae were determined on the basis of millilitres of packed cells used. Although this is not an entirely accurate and reproducible unit, it is adequate for the determinations of the ratios of adenine/thymine, guanine/cytosine and purine/pyrimidine as previously determined by Wyatt for insect viruses[8]. The ratios varied from 1·01 to 1·10 for adenine/thymine, from 0·99 to 1·06 for guanine/cytosine, and from 1·01 to 1·09 for purine/pyrimidine (Table 1).

Table 1

Organism	Molar ratios in deoxyribonucleic acid		
	Adenine / Thymine	Guanine / Cytosine	Purine / Pyrimidine
Navicula pelliculosa	1·01	1·06	1·03
Nitzschia palea	1·09	0·99	1·04
Cylindrotheca gracilis	1·02	1·00	1·01
Anacystis nidulans	1·04	1·08	1·04
Chlorella pyrenoidosa	1·10	1·08	1·09

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