bonate or cellulose powder, from a celaxanthin-like fraction[6] we have isolated from berries of *Celastrus rosthornianus*.

The hypophasic pigments were extracted with petrol after acidification of the methanolic alkali. The absorption spectrum of the total fraction corresponded with values given for torularhodin, an acidic carotenoid fraction found in various Rhodotorulae[7]. We were able to separate this fraction into two major bands using an adsorption chromatogram of cellulose powder. The two fractions had similar absorption spectra, the maxima (in light petroleum) being: lower band, 496 and 526 mμ, inflexion at 460 mμ; upper band, 497 and 530 mμ, inflexion at 460 mμ.

Fractions similar to both these acidic compounds have been found in cultures of *Rhodotorula rubra* (J. F., unpublished observations).

Bean and Brooks[8] reported an albino *Pyronema* capable of normal reproduction. We have produced an albino mutant by exposing ascospore suspensions to an ultra-violet lamp emitting mainly at 254 mμ. The albino mutant required light to produce apothecia; but on examination of the acetone extracts no colourless polyenes were found. We were also unable to detect colourless polyenes in unilluminated cultures of either wild-type or albino *P. confluens*.

We conclude that in *Pyronema confluens* we have two distinct and unrelated photochemical effects. One leads to the synthesis of carotenoids and the other to the formation of apothecia. As a result of these observations we suggest that Robinson's hypothesis is invalid.

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For one of us (J. F.) the work described in this paper forms part of the programme of the Food Investigation Organization of the Department of Scientific and Industrial Research.

M. J. Carlile

Botany School,
University of Cambridge.

J. Friend

Low Temperature Research Station,
Department of Scientific and
Industrial Research,
Cambridge.

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Isolation of Plant Starches

In the course of studies on the apple fruit, the need arose for a quantity of apple starch. None of the published methods of preparation we tried was entirely satisfactory, and a simple, rapid method was evolved which seems to have a general application. Starches have been prepared from a number of materials, which are listed in Table 1, together with the nitrogen content of the starches.

The tissue was ground in a Waring blendor with sufficient cold 1 per cent solution of ammonium oxalate to produce a thin mixture, which was then filtered through muslin. This process was repeated on the residue. Occasionally a third extraction was required in order to remove the starch completely. The suspension was centrifuged in conical tubes at 200–300 *g*. Starch became packed in a tight layer at the bottom, and impurities were readily removed from its surface by gentle washing. The starch was suspended in water, centrifuged out at about 1,500 *g* and the surface washed. This was repeated: a total of four or five times was sufficient for the materials listed in the table. The presence of impurities on the surface of the starch layer was easily seen. Occasionally a small amount of impurity settled below the starch. This was removed by suspending the whole in a small amount of water and centrifuging three or four times for a few seconds, the suspension being poured each time into a clean tube. The purified starch was washed finally with alcohol and ether.

Table 1

Source	Nitrogen (per cent dry wt.)	Source	Nitrogen (per cent dry wt.)
Green apple	<0·01	Chestnut	0·02
Green tomato	<0·01	Butternut root bark	<0·01
Carrot	0·08	Sumac bark	0·06
Potato	0·03	Marigold leaves	0·06
Wheat (mature)	0·05	Tobacco leaves	0·02
Maize (mature, soaked)	0·06		

In polarized light all starches except those from leaves showed a characteristic maltese cross. The granules of the leaf starches were flat and showed rotation of polarized light only when viewed on edge. Examination of stained preparations of all samples indicated a high degree of purity and the granules were undamaged mechanically.

F. B. Johnston

Chemistry Division,
Science Service,
Ottawa.

Chromosome Counts in the Rhodophyceae

Nuclei of the Rhodophyceae are often difficult to observe either on account of their small size, the presence of excessive mucilage or the cartilaginous nature of the tissues in which they occur. Using squash techniques and staining with ferric ammonium sulphate and aceto-carmine[1], or with aceto-carmine alone, both mitotic and meiotic divisions have been observed in a number of red algae.

January and February were found to be good months for obtaining rapidly growing tissues, antheridial material being especially suitable. Fixation was in acetic–alcohol (1 : 3) or Carnoy's fluid.

Chromosome counts of the following species, arranged according to the Preliminary Check List of British Marine Algae[2], have been made.

	n	$2n$	Previous counts (ref. 3)
Cystoclonium purpureum (Huds.) Batt.	—	50	—
Rhodymenia palmata (L.) Grev.	21	—	—
Ceramium rubrum (Huds.) Ag.	34	—	—
Cryptopleura ramosa (Huds.) Silva.	30	—	—
Membranoptera alata (Huds.) Stackh.	32	—	—
Delesseria sanguinea (Huds.) Kylin (ref. 4)	31	—	$2n=40$
Laurencia hybrida (DC.) Lenorm ex Duby.	31	—	$2n=40$
Laurencia pinnatifida (Huds.) Lam.	29	58	$2n=40$
Polysiphonia elongata (Huds.) Harv.	37	—	—
Polysiphonia lanosa (L.) Tandy.	27	—	—
Polysiphonia nigrescens (Sm.) Grev.	30	60	—
Rhodomela confervoides (Huds.) Silva.	32	—	$2n=40$

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