parts smeared with lanolin were cut off. The results are shown in Table 2.

The moisture contained in the pieces decreased slightly even in air of 100 per cent humidity. This may perhaps be due to evaporation during the transfer to and from the container for incubation. The pieces treated with indole-3-acetic acid had high osmotic concentration, the solute increase being large. The gibberellin treatment, on the contrary, caused a decrease in the 'solute'. It is therefore suggested that anatonosis is caused by indole-3-acetic acid, and catatonosis by gibberellin.

It has often been shown that indole-3-acetic acid increases extensibility of the cell wall. Together with this, the fact that anatonosis is caused by indole-3-acetic acid presents a simple hypothesis which can explain the way this acid causes elongation. On the other hand, gibberellin rather causes catatonosis, and, as has been reported[1,2], makes pieces of stem elongate less under a stretching force. Hence the mechanism of action of gibberellin should be sought from some other point of view.

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Protein from Sugar Cane

Sugar cane is a major crop in many areas of the world where there is also malnutrition, particularly a shortage of dietary protein, and a high birth-rate. It is important that these areas should exploit to the full any potential source of protein for human diets, either to be consumed directly or indirectly through animal feeding.

Pirie has canvassed widely for more attention to the potentialities of leaf protein extraction, but sugar cane leaves, in common with the leaves of all high-yielding crops, are very low in protein, containing only about 6 per cent on a dry-matter basis.

The basis of extracting leaf proteins is maceration, filtration and coagulation. This scheme is almost followed by sugar factories for preparing the cane juice prior to its concentration, the heat-coagulated protein being filtered off along with other solids to give filter cake which may be returned to the fields as a soil amendment or even dumped as waste.

The heat-coagulable nitrogen content of cane juice is very small, but nevertheless the quantities involved during a crushing season are high.

Mauritius, with an annual crop of around 550,000 tons of sugar, produces about 100,000 tons of filter cake with a nitrogen content of 1 per cent. In other words, about 6,000 tons of cane juice 'protein' are returned to the soil each year as a fertilizer in a country where protein-deficiency symptoms are common among the population.

In the laboratory it is simple to produce a precipitate containing up to 8 per cent nitrogen from cane juice; on a factory scale, however, the problem is more difficult.

Much work has been done in cane-producing countries on the separation of cane-wax, but no process has yet proved to be economical. As the coagulate formed in cane juice on heating carries much of the wax with it, a combination of protein and wax recovery may prove to be financially interesting.

Research work is in progress in Mauritius to study the amino-acid composition and nutritional values of the heat-coagulated precipitates and the technological aspects of their separation. The full results of this work will be published later.

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Microspectrophotometry of *Euglena* Chloroplast and Eyespot

A simplified microspectrophotometer developed in our laboratory was applied to obtain the *in vivo* absorption spectra for the chloroplast and eyespot of the algal flagellate *Euglena*. The optical and electrical characteristics of this instrument, which utilizes a Bausch and Lomb grating monochromator and a cadmium selenide photoconductive cell, have previously been reported[1].

Euglena gracilis Z strain (obtained originally from Dr. S. H. Hutner, Haskins Laboratory, New York) cultured in a chemically defined medium under continuous fluorescent light (300 ft.-candles) in a temperature-controlled room of 25° C. was used for this work. Samples of *Euglena* were taken, during their log-phase of growth, from the culture bottles, placed on a microscope slide with the edges of the cover-glass sealed with 'Vaseline' to prevent drying-out of the organism and pressure applied in order to immobilize them. No further preparation or staining was employed. The prepared *Euglena* slide was immediately placed on the microscope, a chloroplast or eyespot was selected and focused for scanning with the microspectrophotometer. The reference area was the suspending medium adjacent to the organism; the half-band width of the incident radiation was 4·6 mμ. The green chloroplasts measure about 1μ in diameter by about 10μ in length[2]. The orange-red eyespot is 1–2μ in diameter by 3μ in length; it consists of packed granules and is close to its effector, the flagellum[5,6].

In Fig. 1*a*, the absorption spectrum of an individual chloroplast over the wave-length range 250–340 mμ is illustrated. The results are presented as percentage absorption for intervals of 10 mμ. This spectrum is matched at 340 mμ with another chloroplast spectrum, Fig. 1*b*, extending to a wave-length of 700 mμ. Except for small changes in relative peak heights, the results were consistent from one chloroplast to another within the same organism as well as in different organisms under the same condition of time of growth and light intensity. These chloroplasts have two major absorption peaks, one in the region 430–435 mμ and the other in the region 675–680 mμ with minor peaks near 485, 585 and 620 mμ. The peaks were