

The whole landscaping operation is fully documented down to the date of each tree.

The planned road would cut through the avenue about 100 yards from its end before crossing the river. The route proposed by Mr Bagot and his advisers, which has been approved by the ministry on engineering grounds, would instead bypass the end of the avenue and would be screened from the rest of the park by a sharp bend in the river. It is maintained that this route would cost less than the original one, as the bridge would be 45 feet shorter than that planned by the MOT engineers, and that the only property to be disturbed would be the Brettargh Holt convent which would be cut in half. Although this would be unfortunate, the "Save Levens Park" movement considers that this is a small sacrifice for the preservation intact of one of the last surviving examples of seventeenth century English landscape gardening.

## BOTANY

### Roadside Botany

from our Botany Correspondent

CONSERVATIONISTS, farmers and highway managers met in London on March 14 to discuss the function and management of road verges. These three groups may have different priorities, but the amicable atmosphere of the symposium suggested that they have each other's interests at heart; all that is needed is cooperation for roadside verges to become a haven of rare and attractive plants while not interfering with the safety and amenity of what is described under Common Law as "a perpetual right of passage for the Queen and all her subjects".

Putting the conservationist's point of view, Dr F. H. Perring of the Biological Records Centre, Monks Wood Experimental Station, said that in many areas of arable lowland in England the verges represent the last vestige of grasslands which existed before the modernization of agriculture. The rich pastures of the past often survive only on unploughed and unsprayed verges. Many roadside verges also provide a habitat for some of Britain's rare plants. Dr Perring's group have found that at least twenty-seven of the three hundred rarest species grow on roadside verges; *Linum anglicum*, perennial flax, grows only in this habitat and the same goes for several other species. Clearly the loss of one roadside verge could mean the end of a species in Britain, and county naturalists' trusts have already stepped in and persuaded local authorities to protect the sites of some of the rarities when roadworks are in progress.

The farmers' concern is with preserving the safety of road users, keeping weeds out of the fields and maintaining good drainage, all of which are hampered when roadside verges are not cut regularly. The danger of weeds spreading into agricultural land from roadsides, however, is probably not as great as sometimes thought. Mr R. J. Chancellor of the Weed Research Organization, Oxford, described a survey of roadside weeds around Oxford and Chelmsford. Weeds clearly can and do spread to fields from the verges, but this does not seem to constitute any great danger. In no case was a verge found with a high density of weeds that were also found in adjacent fields.

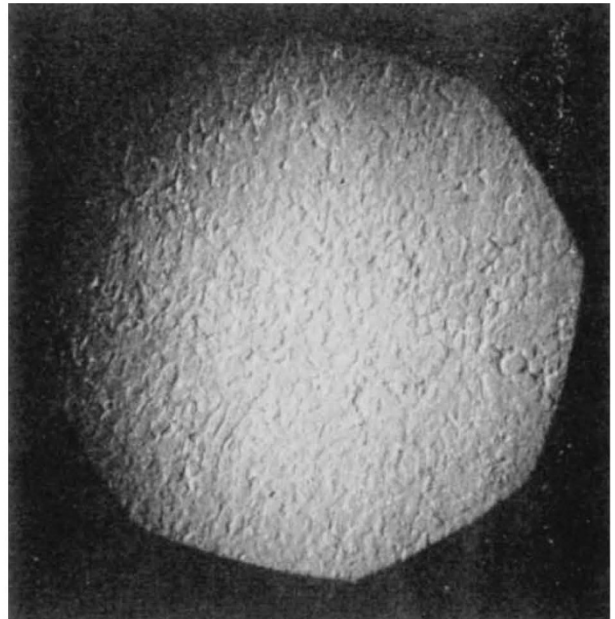
From the point of view of the local authority the

principal aims of the maintenance of road verges are to achieve good drainage of the highway, to provide space for pedestrians, to maintain good visibility for drivers, and to control the weeds listed in the Weeds Act, 1959. As Mr C. R. Chadwick, county surveyor of Wiltshire, said, this usually presents few difficulties on motorways and trunk roads, but on smaller country roads, where large scale clearance may be necessary, the situation is more complex. Several speakers bemoaned the passing of the village lengthman, who used to care lovingly for his own section of the road. Mechanization and sometimes chemical spraying have taken his place, and ecological effects can be drastic.

Local authorities seem to be very willing to respect as far as possible the botanist's wish to maintain a diversity of habitats on roadside verges and to conserve the rarities on them. It is up to local naturalists to offer advice when new schemes are mooted.

## METALLURGY

### Polished Brass



Micrograph of surface of brass specimen machined to a mirror finish in one operation at Philips Physical Laboratories, Eindhoven.

## SKIN

### Growth Control Mechanisms

from a Correspondent

How does an organ know when to stop growing? Professor W. S. Bullough of Birkbeck College, London, went some way to answer this question in a lecture to the Medical Society of the University of Newcastle upon Tyne on March 14. He said that, although the cells of a tissue have the potential for unlimited division, there is a balance between the rate of mitosis and the absolute size of the tissue, which implies a feedback system. Immediately after division, cells may either divide again or take up their tissue function, when



ageing begins. This is the point at which the feedback system probably operates.

Wound healing in the skin results in increased compensatory mitosis around the damaged area. To explain this, a "wound hormone" has been postulated but never isolated. Another explanation is that cell damage results in the loss of an inhibitory substance from the cells. In this connexion, Professor Bullough has shown that *in vivo* injection of an extract of skin homogenate—chalone—depresses mitosis in mouse skin. *In vitro*, mitosis is depressed for about five hours. If adrenalin is then added, there is a second fall in the rate of mitosis, indicating that chalone works with adrenalin as a factor. This is borne out by the fact that, whereas normal skin divides most rapidly during sleep, when the level of blood adrenalin is low, wounded tissue from which the chalone is absent continues to divide rapidly during the day, when the level of adrenalin is high.

Professor Bullough said that each tissue has its own specific chalone, which in the case of pig skin is a glycoprotein of molecular weight about 25,000. Surprisingly, chalones are not species specific, for an extract of codfish skin is effective in animals as phylogenetically distant as mammals. When tissues attain a certain size the concentration of chalone is sufficient to prevent further growth; if damage or cell death occurs so that the concentration of chalone is reduced, the tissue grows until it reaches the *status quo*. One good example of the adaptive significance of the process is during times of stress, for example, food shortage; because there is a high concentration of adrenalin, cell division is depressed and considerable metabolic energy is saved.

Interest in chalones has been stimulated by interest in cancer. Some cancer cells appear to have a fault in membrane permeability, resulting in loss of chalone and a predisposition towards high mitotic activity. This effect can usually be blanketed by the normal high chalone concentration of the surrounding cells. Low local concentrations of chalones, resulting, for example, from injury, may allow such "precancerous cells" to develop into a tumour. Professor Bullough said that treatment of skin melanomas with tissue extracts in a limited number of small animals has been encouraging; complete recovery has been achieved provided that treatment induces all the cancer cells to pass from the mitotic cycle onto the ageing pathway.

#### UNIVERSITIES

### Studied Moderation at Bristol

THE University of Bristol seems to have demonstrated an effective way of dealing with the modern student disciplinary problem—the student revolt *en masse*. The Committee on Student Discipline at Bristol has found 26 students guilty of involvement in planning or implementing the sit-in at Senate House in December. The demonstration was in support of a claim that the university's student centre should be open to all other colleges in Bristol. The students have been required to sign statements accepting the consequences of their participation in any further disruption of the university's activities. Failure to sign will result in one year's suspension or, in the case of two students, expulsion. Some of the 26 have already signed and the indications are that the rest will follow suit.

Writs were issued by the university against some of

the participants some days after the sit-in began, but were later dropped. It is thus of interest that the report of the university Senate affirms that the legitimate expression of deeply felt convictions, "by all members of the university, is a right that Senate will defend with all its strength".

Given the seriousness with which university administrators regard the possibility of disruption of university life by student militancy, and perhaps more important the publicity attendant on ineptitude—LSE and Birmingham are glaring examples—it remains to be seen whether the iron fist in kid glove policy demonstrated at Bristol will prove effective in moderating future student unrest.

Whether or not the Bristol Students Union Building should be open to members of other colleges in the town is still under negotiation.

#### CHURCHILL COLLEGE

### Another Barrier Down

A MEN'S college at Cambridge University has at last taken the plunge and decided to admit women—only a few, but women none the less. In the autumn of either 1972 or 1973, Churchill College will enrol up to forty women. The move will, no doubt, precipitate similar action in several other men's colleges at Cambridge and Oxford. On the news of Churchill's decision, the Provost of King's College, for example, issued a statement saying his college was actively considering admission of women and would make a decision after collaboration with other colleges on admissions procedures. At Oxford, New College, which last year publicized the fact that it was discussing the idea but has since said little, could well be the first to break with tradition. Now that women can be members of men's colleges as well as members, and even presidents, of the Union Societies, almost all aspects of Oxbridge life have reached the twentieth century.

It is fitting that Churchill should give the lead. For one thing the college must by statute have at least 70 per cent of its members in science and technology. The Master of Churchill College, Professor W. R. Hawthorne, hopes that the admission of women to Churchill will stimulate increased enrolment in such faculties as engineering, where at present there are only five women students. When the college was founded nine years ago, many critics argued that it should have been a women's college or at least half and half. There was and still is a much greater need for more new places for women than for men, and the ratio is at present eight men for every woman undergraduate. Plainly the change will be popular for all kinds of reasons.

If anything, academic standards should benefit and social life should improve. Moreover, because of the imbalance between the sexes, women have been turned down at Oxbridge while many academically inferior men have found places. Churchill seems to have anticipated the complaint that it is now proposing to do too much for women by planning a simultaneous increase of up to eighty in the total number of undergraduates.

But will the women's colleges at Oxbridge be the first to feel the draught? On the face of things, they