

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

will now have to compete more vigorously for teachers and for students.

Professor Muriel Bradbrook, the Mistress of Girton—one of three women's colleges at Cambridge—said this week that she welcomed the decision even though she could see no great reserve of women scientists in the schools. Her own college, she said, was always on the look-out for more women scientists of the right calibre. She hoped that Churchill's decision would not simply draw off women science undergraduates who would previously have gone to Girton or one of the other colleges, but rather that it would stimulate girls' schools to emphasize science. She anticipated that Churchill and any other men's college which follows its lead would work out some joint examination scheme for entrants with the women's colleges so as to increase the total number of applicants.

As Oxbridge colleges ponder their reaction, some of the Ivy League universities in the United States are working out their own ways of dissolving the remnants of monasticism they assimilated from Oxbridge. After Yale's plans to team up with Vassar came to nothing, the university decided to admit women undergraduates instead—the first will arrive in September. Princeton is following suit with 1,000 places for women. And Harvard and Radcliffe, after 25 years of morganatic marriage, have decided to merge officially. Radcliffe girls will not merely attend Harvard classes and gain Harvard degrees but will become members of the university as well. As at Churchill, they will by the early seventies be living in the same houses, dining in the same halls and coming under the same administration as the Harvard men.

SCOTTISH ASTRONOMY

Seeing from Glasgow

from our Astronomy Correspondent

AFTER more than thirty years, serious observational astronomy is starting again at the University of Glasgow with the opening last Monday of a new observatory with a 20-inch Grubb-Parsons reflector for a centrepiece. Astronomy at Glasgow has an even longer history than at Edinburgh, beginning with the founding of a chair of astronomy in 1760. Since then, the university has had a series of observatories, but in 1935 gave up the unequal struggle against the deterioration of seeing conditions around the city. Even so, there has until recently been a small observatory for students in University Gardens, and one of the functions of the new building will be undergraduate teaching. Now that instrumentation is becoming increasingly important in astronomy, the department has also been able to justify the telescope as a test-bed for the development of new equipment, which will be used on more favourably sited telescopes elsewhere. The department has its eyes on the 98-inch Isaac Newton telescope at Herstmonceux. Until now, of course, the accent has been on theoretical studies, chiefly stellar structure, solar physics and the motion of stars. With the new facilities, the department will go in for studies of the polarization of light from celestial bodies—rapidly rotating stars, interstellar material and lunar luminescence.

As well as the £16,000 telescope, the observatory has a spectrograph, a solar tower and an 8-inch coelostat as well as provision for a radio telescope. There is also

a library, a lecture room with a small planetarium, and laboratories for undergraduate teaching. The total cost was more than £100,000.

TRYPANOSOMIASIS

African and American Experience

FOR millions of people in tropical Africa and America, a life free from trypanosomiasis must be almost inconceivable. In spite of intensive research, there is no single, inexpensive method of mass control which is effective in all epidemiological conditions, and total eradication remains a dream. For many years, local control measures have been based on strict surveillance, early diagnosis, chemotherapy, chemoprophylaxis and vector control, but these measures tend to break down in the face of economic and social problems with resulting recrudescence of trypanosomiasis.

This week, the World Health Organization has published a report which provides a comparative approach to the similarities and differences between American trypanosomiasis (caused by *Trypanosomonas cruzi*) and African trypanosomiasis (caused by *T. gambiense* and *T. rhodesiense*) in the hope that this will help in the development of improved methods of control. The report (*WHO Technical Report Series No. 411; 6s*) sets out to draw attention to techniques for the study of one disease that could be adapted to the study of the other. It also reviews the advances that have been made and recommends areas of research which are ripe for tackling. The report will no doubt be enthusiastically received; according to a member of the WHO scientific group secretariat, the report is "a most valuable exercise"; for the first time it has brought together workers from all over Africa as well as those working on the disease in Europe, thereby resulting in useful discussions on problems in the field. WHO has considerable experience of trypanosomiasis and at the present time has a scheme running in Kenya under Dr David Scott concerned with the epidemiology and eradication of African trypanosomiasis.

Vector control apart, there are two ways of controlling the disease: active immunization and chemotherapy. Dr P. L. F. Boreham, of the department of zoology and applied entomology, Imperial College of Science and Technology, says that although it is possible to immunize against homologous antigenic types, the prospects of a vaccine for general use in the foreseeable future are poor because antigenic variation occurs so frequently and unpredictably in wild strains of African trypanosomes. The WHO scientific group, though more optimistic, nevertheless recognizes the difficulty of comparing the different methods of immunization in experimental use because of the lack of standardization. It therefore urges that immunization and challenge inocula should be derived from standard stabulates maintained in two WHO banks. It also urges that studies should be made of the use of adjuvants—the relationship between the immunization schedule used and the rise and fall of immunity, and the use of irradiation for the attenuation of organisms.

African trypanosomes respond well to drugs to which *T. cruzi* infections are notoriously resistant. Precisely how the resistance develops—whether, for example, transfer of drug resistance as in bacteria is involved—is not known. Indeed, it is not even known whether