

fairly, especially because common membership of the European Union ensures that people can move freely from one place to another.

The more taxing question is that of Britain's membership of the European Union itself. That is already at least a confederation of states on the Swiss pattern. Although member states still retain control of foreign policy and defence, self-interest dictates that they work increasingly in concert. Meanwhile, the volume of legislation promulgated from the centre far exceeds what Swiss cantons would stomach. Although any member could probably still withdraw from the union without suffering serious penalties, that will not indefinitely be the case. Yet the British government continues to insist that federalism is not on the European agenda. Constitutionally, it may not be, but in reality it is unavoidable. That is why clever European states are busily staking out boundaries of their cultural identity that may survive the processes under way. □

Complexity on a chip

Do not pity those compelled to do without their latest microprocessor.

INTEL, the US manufacturer of microprocessors mounted on silicon chips, has sadly dented its own reputation for competence in the past few months, and needlessly. The tale has now been told countless times. Intel's latest and much advertised microprocessor, called "Pentium", was found to be defective in design as long ago as last September. The built-in co-processor (used, among other things, for floating point calculations) was discovered not always to perform accurately. Unfortunately, the company did not make a clean breast of what it knew when the error first came to light, but rather let its competitors draw attention to it at the season in the consumer year when fond parents are most inclined to buy expensive presents for their offspring, in the run-up to the Christmas holiday. Nobody can accurately estimate how many computers were not sold because of the bad publicity.

This is not, of course, the only occasion when a manufactured chip has failed to perform as the designers intended. Moreover, it is inevitable that the increasing complexity of the circuits now etched on silicon must increase the difficulty of detecting errors in design or manufacture. In a closely related field, it is well-known that complex software programs are unlikely ever to be tested in all the circumstances in which they are meant to function. In that spirit, chip-manufacturers should be ready to acknowledge that their craft has reached the point of complexity at which simulated advance testing cannot be entirely effective, and should be ready to share their anxiety with their customers. What that implies is what manufacturers of other products, aircraft for example, have long been familiar with: the time elapsed between the conception of a new design and its successful sale is prolonged by seemingly endless proving trials. But time means money, does it not? Of course. But not endless money. And who will seriously weep for the army of

computer users who must rub along with Pentium's predecessor, the "486", while the testing is carried out? □

Darwin lives on . . .

A British magazine appears to believe (with Lysenko) that genes can triumph over natural selection.

WILL Darwinism follow Marxism into oblivion? That is the question raised by *The Spectator*, a largely political British weekly magazine even older than *Nature*, whose origins (in 1828) lie in the social ferment preceding the great reform bills of 1830 and 1832. More recently, *The Spectator* has forsaken its liberal beginnings for what may easily be mistaken for their opposites. Now, after many months of exultation that victory in the Cold War has gone to the like-mindedly righteous, it has given houseroom to four pages of speculation on what will happen now that Darwinism is dead. The author is one Warwick Collins, whose claim on public attention appears to be that he was once a student of Professor John Maynard Smith.

The interest of Collins's article is not that it should have been written — people are forever writing all kinds of things — but that it should have been published so portentously. *The Spectator* says, "now that the environmental theories of Marxism have collapsed..., perhaps the same fate will befall Darwinism". That, in itself, is a very curious proposition. Neither the magazine nor Collins appear to have remembered that Soviet-style Marxism backed Lysenko against Darwin precisely because it could not stomach the idea that people cannot triumph over their genomes (or those of cereals) by taking sufficient thought.

Sadly, there is worse to come. Thus Collins writes that the "premise [of Darwinism] that the organism becomes adapted to its environment, and is thus 'designed' by the environment, appears absurd. Precisely how may a passive environment design a highly active stream of organisms?" No wonder, it may be thought, that Collins appears not to have completed his time as a student of Maynard Smith. The premise of Darwinism is that there is not adaptation but variation, and that less well-adapted variants are less fit (in the technical sense of being less likely to perpetuate their genes). Beginning students fail examinations for making such mistakes although Collins, undeterred, goes on to argue that Darwinism entails the phenomenon of "pre-adaptation" (clairvoyance by an organism's genome) and that natural selection suppresses variation.

What is all this in aid of? "To our modern eyes, ... the vital processes of evolution are powered ... by indigenous processes within organisms themselves." Shades of Lamarck? Collins has something more ambitious in mind. "Darwin's view that evolving organisms are the product of the environment is likely to be superseded by the belief that it is the active indigenous processes of those organisms which shape and determine that environment." Gaia made conscious and Lysenko made respectable. Is that what *The Spectator* intended by giving space to Collins? □