continental drift, they are seen to straddle the globe in two belts, one in each hemisphere. When the continents of the present northern hemisphere are reassembled in the pattern of fit proposed by Bullard *et al.*, an almost unbroken belt of anorthosites can be traced from the Ukraine through Poland, southern Norway, the Hebrides and Greenland to the numerous outcrops in Labrador and Quebec. Here the belt seems to bifurcate, one branch continuing the curve of the belt as far as Virginia, the other tracking westwards across the United States.

The anorthosite massifs scattered across the southern hemisphere also fall into line when the continents are reassembled in Du Toit's reconstruction of Gondwanaland. The belt runs from Australia through India, Madagascar, Tanzania and Angola as far as southern Brazil.

As remarkable as the geographical relationship of the anorthosite massifs is their apparently similar age. Available dates range from 1,750 million years to less than 1,000 million but concentrate at about $1,300 \pm 200$ million years. Given the uncertainty of dating rocks of this age it is possible that many of the anorthosite massifs were formed at the same time.

The two belts are not related to any tectonic directions known for Pre-Cambrian times. Herz suggests two explanations for the formation of the belts; either the higher geothermal gradient that existed in the early history of the Earth may have favoured the rise of anorthosite from lower crust or mantle, or the anorthosite belts may be the result of some cataclysm. Impact by a meteorite could have triggered off the displacement of the anorthosites. Another possible cataclysm is the birth of the Earth–Moon system.

The rate at which the Earth has been slowing down, and hence the rate at which the Moon has been receding from Earth, can be calculated from the daily growth ridges preserved on fossil shells; on this evidence the nearest approach of the Moon to the Earth, marking the time of its possible capture, can be argued to have occurred between 500 and 2,000 million years ago. Herz suggests that disturbances in the geothermal gradient caused by the capture of the Moon could have caused the rise of the anorthosite belts some 1,300 million years ago.

The origin of the Moon is still uncertain, present opinion favouring either the capture hypothesis or the formation of the Moon in close association with the Earth. Herz has mapped the anorthosite massifs on the positions the continents occupied in Gondwanaland and Laurasia, which began to break up some 300 to 200 million years ago, but it seems possible that the distribution of the land masses 1,300 million years ago was not dissimilar, in which case the belt-like pattern of the anorthosites would be retained in a map of those times.

BOTANY

Hybrids in the British Flora

from a Correspondent

HYBRIDS between different species of flowering plant are not just occasional accidents of nature with fleeting significance; they are a consequence of the ecological and evolutionary history of the species, and in some cases a means to a new future. This was Professor D. H. Valentine's message when he gave the third E. F. Warburg Memorial Lecture in Oxford on May 22. The lecture was organized by the Berkshire, Buckinghamshire and Oxfordshire Naturalists' Trust and the Ashmolean Natural History Society of Oxfordshire.

For a hybrid to occur, several conditions must be fulfilled. For example, the parent species must grow together, or at least in contiguous areas, like the oxlip (*Primula elatior*) and the primrose (*P. vulgaris*) in East Anglia. They must also have at least some ability to produce viable seeds when inter-pollinated, and the hybrid seedlings must be vigorous enough to survive in competition with the surrounding vegetation, including the parent species. Many interspecific hybrids, such as that between the common and hard rushes (*Juncus effusus* and *J. inflexus*), tend to be found in habitats which are themselves intermediate between the habitats preferred by the parent species. This is partly because the parents are likely to meet in such sites, and partly because the hybrids have their best chance of survival there. Among the more surprising cases of hybridization are those between species which scarcely overlap in flowering time, and have been thought to be pollinated by different insects—for example, the red and white campions (*Silene dioica* and *S. alba*). The barriers to crossing must be less effective than they appear.

Many hybrids no doubt die without leaving any progeny, but there are some with considerable evolutionary importance. If the hybrids are reasonably fertile, as are those between wood and water avens (*Geum urbanum* and *G. rivale*), back-crossing to the parents and inter-crossing of the hybrids can result in a spectrum of forms grading from one parent species to the other; this is known as a hybrid swarm. Repeated back-crossing to one parent can lead to the infection of one species by genes from the other—a process called introgression. Hybrids which are sterile may persist through vigorous vegetative growth. If poor chromosome pairing is the cause of sterility, doubling of the chromosome complement may restore fertility. This sometimes happens spontaneously, and can be thought of as the instantaneous production of a new species. The hybrid cord grass, *Spartina alterniflora maritima*, is found in both a sterile diploid and a fertile tetraploid form. Professor Valentine pointed out that one of the parents of this hybrid, *S. alterniflora*, is an introduced species to the British Isles. There are many examples of hybridization between native and introduced species, particularly in genera containing weeds, such as the willow-herbs (*Epilobium*). Indeed, many other hybrids found today may be the result of human influence on the environment, which leads to contact between two species which were previously isolated. It is probable, however, that interspecific hybridization has contributed to evolution for much longer than man has been around to encourage it.

PLANT GROWTH

New Gaseous Inhibitor

from a Correspondent

THE influence of light on seed germination interests plant physiologists not least because it was the observation of the effect of certain colours of light on the