

affecting all the nuclei, follows. Divisions in the 'open' tier are orientated along the axis of the pro-embryo and thus give rise to an uppermost single tier of cells, the upper or *U* tier, and, just below it, the next single tier of cells, the suspensor tier, *S*. The primary embryo nuclei are also duplicated. The nature of the mature pro-embryo can be expressed as a formula, $U : S : E$, to which can be added in any given case the number of cells in the parts so developed. The *U* tier is most often ephemeral. The *S* tier elongates to give the primary suspensor.

Excluding the araucarians, this plan is found in all the conifer families. In the Pinaceae, however, the *S* tier does not elongate. This is the so-called 'rosette' tier of *Pinus*. The proximal layer of the *E* cells elongates to function as a substitute suspensor. *Pinus* embryogeny, in detail, is not typical of conifers.

The varying embryogenies in the families and genera can readily be related to a limited number of general evolutionary trends the expression of which seems to be, most often, in no way related to systematic affinities. This phenomenon, the expression of tendencies without apparent regard to systematic affinity, is a dominating feature in conifer embryology both in the pro-embryonic and gametophytic phases. As extreme examples there may be cited: the occurrence of four-celled pro-embryos in forms as distinct as *Athrotaxis*, *Callitris*, and *Torreya*; the appearance of similar types of cleavage polyembryony in *Taxodium*, *Keteleeria* and *Podocarpus*; or the hyphal-like pollen tube in *Tsuga*, *Saxe-Gothaea* and *Araucaria*. Embryological data, therefore, can be applied only with great discretion, if at all, to questions of affinity in conifers. If, however, the embryological data be considered in themselves, it is now possible to indicate, at least along general lines, the main evolutionary trends which have resulted in modifications in the basal plan.

Evolution in the conifers thus appears to be related to two groups of evolutionary trends: one group related to systematic divergence and diversification, the other to modifications in embryological stages. These two groups appear to be separate, as it were overlapping, and the nature of their connexion, which must be intimate, remains a problem. Selection does not seem to be a factor affecting the embryological trends.

THE EDUCATION OF THE COUNTRYMAN

IN his presidential address to Section L (Education), Mr. L. R. Missen defines the countrymen he has in mind as the two to two and a half millions in Britain who live in the open countryside outside villages and probably three and a half to four millions who live in villages. He deals with two misconceptions which are still held by the urban population: that the countryman is the mental inferior of the townsman; and that all those who live in the country work on the land. These misconceptions have in some degree affected the recruitment of teachers to rural schools. The evidence which he quotes shows that with regard to the former the case is at least 'not proven', and there is no difficulty in showing a wide variety of occupations in most rural areas. The theory that country children are mentally inferior to town children is examined,

and the evidence of Sir Godfrey Thompson and others is brought to show that this is a false idea. On the other hand, there are distinct differences between rural children and town children. It is claimed that whereas the country child is frequently slower than his counterpart in the town to grasp a new idea and to assimilate facts, he is more thorough and more painstaking. The country child may lack the fluency of the urban child, but fundamentally his mental equipment is just as good.

The rural school child has been handicapped in the past in many instances through education in schools which were too small, although small schools have some advantages over larger ones. The single-teacher school is rapidly disappearing and the two-teacher school will be the smallest.

In the life of the countryside the most remarkable change is coming about through the mechanization of agriculture, and there is now a pressing demand for men and boys with a sound knowledge of the elementary principles of science. At the school-level, the most exciting development is the new secondary modern school, which is providing an increasing number of well-trained and competent men and women. The rural grammar school will continue to make a valuable contribution in the countryside.

The methods of agriculture, now increasingly scientific, are being met in several ways. The National Agricultural Advisory Service and the farm institutes have done much to increase the farmer's and the farm worker's understanding of their craft; evening classes of the local education authority and day-release classes have supplemented this work. The countryman is in some ways more fortunate than the town dweller in his choice of leisure time occupations; he is less likely to spend his spare time being entertained at the cinema or at football matches. He is a good reader, and the evening institutes offer him a wide variety of cultural and recreational activities.

Mr. Missen concludes that the countryman has been less impressed by the glamour of the twentieth century, and that the steady and unalterable succession of the seasons will maintain a slower tempo of life, which must have nationally a balancing effect. The countryman has far more time for consideration of life's problems than the townsman.

THE ROLE OF AGRICULTURE IN THE BRITISH ECONOMY

SIR JAMES TURNER, president of the National Farmers' Union of England and Wales, is presiding over Section M (Agriculture), and the theme of his presidential address is "a full measure of technical progress in the future will depend very much upon the agricultural industry being able to count upon the right basis of political and economic conditions".

After referring to the long-term planning that is necessary in agricultural production, Sir James discusses the advantages resulting from a stable industry: "The gain to producers from stable markets is fairly obvious. To consumers and tax-payers, the benefits are complementary, accruing from the avoidance either of sharp changes in the cost of living with their consequent impact on wages and