announce them, after decoding, through the local broadcasting stations. In each of the Dominions such stations are growing in numbers, and by their aid messages could be distributed promptly to millions of listeners-in. Of course it may some day be possible, after further invention and development, for speech and music from England or other centres to be put on to every local broadcasting station in the British Empire.

This does not exhaust the possibilities now arising. During the past two or three years wireless amateurs have succeeded in transmitting signals and even speech across vast distances with tiny apparatus. The plant used is so small that it could be installed in a drawing-room. If only we could rely upon plant of this size getting through for days instead of hours, then there would be no need for high-power stations. Even so it is easy to imagine how such glimpses of intercommunication might be made use of in the elaboration of Empire wireless.

The chief results expected from all these efforts to establish an Imperial wireless network can be put in two sentences. Firstly, mutual trade will be facilitated by rapid and cheapened communications, and finance will benefit by a shortening of credit such as followed the introduction of the cables. Secondly, the interchange of opinion between all sections of the British Empire will become fuller; and just as wireless on the small scale has become, in the shape of broadcasting, an important social influence in Great Britain, so wireless on the large scale will have a similar influence in, and strengthen the unity of, the British Empire.

Segregation and Related Problems.

THE laws of evolution and heredity have generally been regarded as universal in their application both to plants and animals. The various theories of evolution have been held by their authors to apply indiscriminately to both kingdoms, and the same has been true of theories of heredity and, with certain limitations, of cellular structure and mitotic division. But there are signs in the more recent developments of genetics that these general resemblances, fundamental as they are, have been over-estimated. In the future, we may expect to see greater emphasis laid on the distinctions, many of which are also fundamental, between animal and plant structure, especially as they affect variations and hereditary behaviour.

The tendency to recognise a divergence between plants and animals in certain aspects of their genetical and evolutionary behaviour has become increasingly evident, both on the breeding and on the cytological side. This tendency is well exemplified in the recent paper on segregation, by Bateson (*Journ. Genetics*, vol. 16, No. 2), the last, unfortunately, which he published before his lamented death. It was the Leidy Memorial Lecture delivered at the University of Pennsylvania in 1922, and in it the greatest biologist, perhaps, of his generation discusses the nature of segregation and the various problems connected with it. In recent years the Merton Laboratory had made extensive studies of variegation in many plants and of various forms of somatic segregation, especially from root cuttings. These in Bateson's hands furnish the basis for a consideration of the nature and significance of the many forms of segregation observed. The fact emerges that not only are most of these forms known only in plants, but also that somatic segregation when it occurs in animals is usually quite different in genetic behaviour and significance.

The term *anisogeny* is introduced for the numerous cases now known in Matthiola, Oenothera, Linum, Campanula, Begonia, and other plants, in which the male and female gametes are carrying separate factors, and it is not clear that this is always due to the loss of one class of gametes after segregation in meiosis. Not only does the place of segregation vary in the many kinds of somatic segregation now known, but also it has been shown by Miss Andersson in the variegated hart's tongue fern that all the 64 spores of any sporangium are alike in the form of plastid they transmit, this depending only in part on the plastid characters of the vegetative tissue from which the sporangium arises. The well-known experiments with rogue peas, made by Bateson and Punnett, Miss Pellew, and others, indicates that here is an orderly type of progressive somatic segregation occurring from below upwards in the plant and accompanied by anisogeny.

Bateson returns to the presence-absence hypothesis and makes out a case for it, based particularly on the interpretation of multiple allelomorphs; for example, the yellow 'eye' series in *Primula sinensis* and the colour series in rabbits. These, as he points out, characteristically form a plus or minus quantitative series as regards one character. The quantitative interpretation of a multiple allelomorphic series is very probably correct; but even so, any advantage of the presence-absence conception appears to be merely a matter of convenience in symbolism. It is, of course, possible that all variations are in essence quantitative. We seem to be arriving at a position in which no essential difference remains between the presence-absence conception and that of each pair of allelomorphs as the result of a germinal change.

In the same number of the *Journal of Genetics*, Castle, Punnett, and Pease continue their discussion of the various types of 'Dutch' rabbits, which have taken the place of the hooded rat as material for the explanation of an apparently continuous series of variations. Castle contends that Self, Dark, and White Dutch form an allelomorphic series, together with modifying factors, while Punnett argues that Dark Dutch is the basic condition, which becomes self-colour through the addition of modifiers. It would follow that an allelomorphic series is not involved in this case; but to settle the matter finally a further study of the linkage relations may be required.

It is clear that segregation remains the central conception in modern genetics, the science which Bateson founded. But it takes a great variety of forms, particularly among plants. Their further elucidation will lead us into new fields.

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