

**SUMMARY OF PAPERS READ PRIOR TO THE ANNUAL GENERAL  
MEETING, 1958**

**CHANGES IN THE ESSEX FLORA DURING THE LAST  
HUNDRED YEARS**

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While the population of Essex has increased enormously, the high density is concentrated in the area nearest London and many unspoiled villages and large stretches of agricultural country remain, which, lacking high ground, appear at first glance to be botanically dull and uninteresting. Botanical research was begun long ago in Essex, and the list of famous botanists of Britain starts with John Ray, born in 1627 at Black Notley in Essex. The influence of the spread of human population on botanical habitats is not only that agricultural and other land is used for housing, but reservoirs and sewage works take interesting marshy ground. Further losses have followed the consolidation of Thames-side marshes, their use as rubbish-tips and the subsequent erection of factories, etc. Mechanisation of timber-felling and farming, particularly the use of combines followed by stubble-burning, and cleaner seed, have diminished the numbers of wild plants and weeds now to be found, if not the actual number of species of plants. There have, at the same time, been gains of aliens, e.g. near the new housing estates where people turn out their birdcages and aquaria, while plants such as *Oxalis corniculata*, *Viscum album* and *Impatiens glandulifera*, which were deliberately introduced into gardens, have spread and become established.

A surprising number of native plants still occur, while many recorded long ago can still be found in, or near, their old habitats, and Essex can take pride in probably having more *Chenopodium botryodes* than any other county in England.

In the discussion which followed, Dr. Dony remarked how essential it is that we should watch carefully for any threat to drain the few remaining marshy areas near London.

Mr. Warren reported that, on the canal near Woking, spraying which is carried out to kill mosquito larvae, is likely to have a bad effect on plants. Mr. David and others regretted the filling-in and concreting of village ponds.

Mr. Lousley mentioned that there are still good botanical areas between the Thames-side factories, and Dr. Rose remarked on the subtle differences in the coastal flora of Kent and Essex, the latter having *Limonium humile* and *Suaeda fruticosa*, which are absent from Kent.

WILMOTT'S BRITISH SPECIES OF *RHINANTHUS*\*

D. J. HAMBLER and M. B. E. GODWARD

The forms of *Rhinanthus* which have been described by Wilmott as new species, and given the names *R. spadiceus*, *R. lintoni*, *R. lochabrensis* and *R. vachellae*, and a new variety, *R. borealis* var. *calvescens*, together with *R. serotinus* (Schönh.) Oborny (*R. major* auct.), have been investigated. Numerous collections were made in many parts of Britain from The Lizard in Cornwall to Tingwall in the Shetlands. The shape

of the calyx (shape index  $S = \frac{\text{breadth}}{\text{length}} \times 100$ ), internode length, height, internode length in relation to number of internodes, intercalary leaf number, flower number, number of flowering nodes in relation to number of vegetative nodes, bract length and shape, leaf length in relation to width, leaf shape (shape index  $\times = \frac{tw}{t} \times 100$  ( $t$  = total number of teeth along margin,  $tw$  = number of teeth from apex to point of maximum width), pubescence and pigmentation, have all been subject to intense investigation as characters capable of distinguishing the British forms. It has been found that it is not possible to use these characters as taxonomic criteria.

In respect of all of them, the British *Rhinanthus* populations form a continuously varying series, or show an incidence which is unrelated to the incidence of others. Some characters vary in the same plant with ageing. Cytologically all show 14 large and 8 small fully functional and regularly behaving chromosomes in the diploid mitotic and meiotic nucleus. Such differences as exist between forms of *Rhinanthus* can therefore be only genetic, and the position is consistent with segregation of genetic characters, affected in their expression by environment, being responsible for the varying forms of *Rhinanthus* in Britain. It was shown that *R. serotinus* and *R. minor* set seed after crossing. At present, then, there are two British species of *Rhinanthus*, *R. serotinus* with a curved corolla tube, and *R. minor* with a straight tube. The "endemic species" of Wilmott cannot be upheld. The diagnoses of Wilmott also show a lack of agreement in certain respects with the type specimens.

It is felt that certain characters, viz. cross pollination and self-pollination, early flowering and late flowering, which are shown among *Rhinanthus* populations, will eventually lead to further speciation.

\*Read by Dr. M. B. E. Godward, who kindly provided the summary.—ED.