

the activity and enterprise of gall insects and depend like the cuckoo among birds upon others to provide suitable conditions for their young or even go farther and actually prey upon the true gall producers. The former is carried to a very high degree of perfection in the case of the gall wasps, since the gall "cuckoos", if we might coin a word, resemble the rightful owners of the gall so closely that it is very difficult to distinguish one from the other. Apparently the same thing exists, though to a more limited extent, among some of the gall midges and there are cases where it appears quite probable that a plant deformity of a given character may be produced by more than one gall midge, each performing its fair share of labour in the development of a common shelter. The enemies of the gall insects, generally termed parasites, are occasionally so numerous that comparatively few of the gall producers attain maturity. They are natural checks and when it comes to discussing the ethics of life, it is a little difficult to draw any satisfactory line

between the gall insects, real parasites upon plants, the associates or cuckoo-like species which subsist at the expense of these plant parasites or the parasites of the gall insects, since they are all engaged in wresting life from other forms of life.

The above gives a little idea of the extraordinary interest attaching to insect galls and gall insects. There are in America, something like 1,400 different species and a considerable number await discovery in practically all parts of the country. Man has an innate love for nature and anything which will bring the individual into closer touch with the verities of life is a distinct gain for the human race. The hunting of animals, the study of birds, the collection of plants, are all manifestations of our love of nature. These are excellent recreations and comparatively well known. Insect galls and gall insects offer a large, accessible and relatively unknown field for the student of natural history, which can be entered to advantage by a very large proportion of amateur and professional naturalists.

BOOK NOTICES AND REVIEWS.

INTERESTING SEASONAL DATA.—In the *Migrational Bulletin* issued by E. H. Forbush, Ornithologist to the Commonwealth of Massachusetts, No. XI, dated Nov. 15, occurs the following:

"The autumn has been remarkable. Although there were many rains in September, most of the storms were warm and the season has been so mild and open that not only have fall flowers escaped the frost, but spring flowers and fruits have developed. Wild strawberries, raspberries and blackberries were ripening late in October. Many lawns, mowing fields and pastures still retain their green verdure. From the Berkshire hills to the Atlantic coast the trailing arbutus bloomed late in October, and the common dandelion blossomed again in many localities, besides the fall species, and in some cases it seeded for the second time this year. Both spring and fall dandelions were blooming the first week in November. Willow catkins are now (Nov. 15) open in eastern Massachusetts, and a few flowers still bloom in some gardens.

The effect produced upon the birds by such spring-like weather was what might have been expected. Not only did many of them sing in the usual subdued autumn tones, but some apparently gave their full spring songs. Even the flight songs of several species have been reported, and the singing of robins, song sparrows and some other species continued well into November. The mild weather seemed to delay the departure of some individuals of several species, and to bring about dilatory movements of the waterfowl."

Though the above writer may be mistaken in ascribing this late floral and fruiting activity to unseasonably mild weather, the facts of the case are interesting, especially the ornithological ones and it would be well for us to see just how widely these conditions and phenomena extended during the past autumn.

Late fall blooming of spring plants is not a very uncommon occurrence,* almost every season a few violets can be found here and there in the woods. Bloom on such plants occurs only immediately after awakening from a period of dormant quiescence such as is effected normally by the cold winter season, but a prolonged drought in summer will produce a similar effect and it can be artificially produced by florists by the use of narcotics, anesthetics or other more simple means of inducing unseasonable rest which will be followed by the production of bloom. Without doubt, the unusual amount of fall blossoming here reported was induced by a previous dry spell followed by wet that deceived the roots into the belief that a new spring had come. It will probably be found that in every such case it is the future that has been drawn upon, that next spring's flowers have been expended and the coming season will be one without floration and sterile for the misguided individuals that bloomed at the wrong time.

*See Cephas Gullet, On Autumn-flowering of Various Wild Plants in 1909; *Ottawa Naturalist*, XV, August, 1901, pp. 122-126, in which a number of such cases are noted, though ascribed as above to unusually mild weather.