argument upon statistics. In accordance with his theory he made a number of predictions as to the distribution of species in New Zealand. These predictions have been verified by statistics which he has collected there, and which he presents in his latest paper, furnishing a very striking verification of his theory.[11]

Supposing a given species to have entered the islands at a certain point, and spread at an even rate, the area of its distribution at any time would be a measure of its local age. It is reasonable to suppose that this species would give rise to endemics, in increasing number as time went on, and as the area occupied became greater. At the limits of the islands farthest from the point where the species entered, the local age of the species, and consequently the number of endemics to which it had given rise, would be least. Following out such a conception, WILLIS predicted that the middle zones of the islands should show a greater number of endemics than the outer zones, and this proved to be the case.

Following the same line of thought, those endemics which were produced early would have most nearly reached the limits of the islands in their distribution, while those produced later in the local history of the parent species would be more limited in their distribution to the middle zones of the islands. Consequently, the author predicted that "the range of an endemic species would on the average be greater the nearer that one of its limits was to either end of the islands." This also was verified.

Another prediction made and verified was that widely distributed species would be more widespread within the islands than endemics, as in the case of Ceylon. On the basis that the land connection with New Zealand both ended earlier and began earlier than that with Ceylon, the author predicted that the average area occupied by a species in New Zealand would be greater than in Ceylon, that is, that both "wides" and endemics would be comparatively fewer in the lower or earlier stages in the scale. These predictions also were verified.

Those who wish to examine the exact mathematical statement of the author's method and conclusions are referred to the paper.—MERLE C. COULTER.

A floating reed swamp.—Occurring in the delta of the Danube River is a remarkable form of floating swamp formed by the reed *Phragmites communis* var. *flavescens* Gren. and Godr. It has been described by Miss PALLIS,[12] who visited and studied it in 1912 and again in 1913. She found that this swamp, known as Plav, differs from a closed reed swamp chiefly in the fact that it floats, the surface of the mat of soil and vegetation remaining constantly about

[11] WILLIS, J. C., The distribution of species in New Zealand. Ann. Botany **30**: 4–457. *fig. 1.* 1916.

[12] PALLIS, MARIETTA, The structure and history of Plav, the floating fen of the delta of the Danube. Jour. Linn. Soc. **43**:233–290. *pls. 11–25.* 1916.

4 cm. above the fluctuating surface of the water. These fluctuations of the water level are great, as there are usually 3 floods each year, 2 in spring and 1 in autumn, the water at such times rising 1–6 m. The floating mat is made up almost entirely of vertical rhizomes of the reed, which, with the aid of their roots, retain much soil, the whole attaining a thickness of 0.8–2 m. The aerial shoots vary in height from 1.2 m. to 5.15 m. This mat originates attached to the soil, but becomes floating with the death of the basal rhizomes and the action of such floods as are accompanied by only small depositions of silt. The maximum size of units becoming detached is given as 2500 sq. m. In the shallower water much of the reed mat remains permanently attached. Little other vegetation is mingled with the *Phragmites*, its only competitor being *Typha angustifolia*, which is apparently only able to inhibit its growth for a short time. The reed seems to be succeeded by *Cladium mariscus* or by an aggregation of species of *Carex*.

The most remarkable part of this paper is the hypothesis offered to explain the difference in size of the reed, varying as it does from 1.2 m. to 5.15 m. This Miss PALLIS ascribes, not to any difference of variety, but to a difference in age. She believes that the giant shoots, 5 m. in height, have arisen earliest and at the base of the branch system of the rhizoids, and that with progressive advancement toward the higher parts of the branch system the aerial shoots have become gradually smaller and shorter. The change in size is thus a senile degeneration which ultimately results in the death of the individual. Unfortunately, the necessary experimentation to prove this theory would extend over many years and hence could not be undertaken. Many of the facts appear to support Miss PALLIS' hypothesis, and most of her argument seems sound, but some of the evidence seems to point to overcrowding being at least one factor in the reduction in size of shoots. More data regarding the germination and early growth of the reed should shed light upon the question of the duration of life of the *Phragmites* and its final senescence and death.—GEO. D. FULLER.

Taxonomic notes.—DUCKE,[13] in a presentation of new and little known plants of the Amazon region, discusses 146 species, 102 of which are Leguminosae. There are 34 new species described, 21 of which are Leguminosae. Among the new species there is a *Zamia* (*Z. Lecointei*). The paper appears in the initial number of a journal issued by the Botanical Garden of Rio de Janeiro.

GREENMAN[14] has published the second part of his monograph of *Senecio*, including the AUREI (§ 6). He recognizes 48 species and describes 5 of them as new. Of the new species, 2 are from the region of Newfoundland and

---

[13] DUCKE, A., Plantes nouvelles on peu connues de la région amazonienne. Archiv. Jard. Bot. Rio de Janeiro **1**:1–159. *pls. 19*. 1915.

[14] GREENMAN, J. M., Monograph of the North and Central American species of the genus *Senecio*. Part II. Ann. Mo. Bot. Gard. **3**:85–194. 1916.