

354 *Floral Mechanism of Welwitschia mirabilis, Hooker.*

the tissues of the thigh may also help to prevent the damping of the crest of the pulse waves. The leg arteries are probably held in a more supported state, less labile, and for this reason also the pulse will be conducted to the leg with less diminution in force. Size of lumen, resonance and lability are three factors which may all take a part in the production of this phenomenon. We have brought forward in this paper experiments which demonstrate these factors at work.

This research was carried out with the aid of a grant from the Royal Society Government Grant.

On the Floral Mechanism of Welwitschia mirabilis, Hooker.

By ARTHUR HARRY CHURCH, Lecturer in Botany, University of Oxford.

(Communicated by Prof. A. C. Seward, F.R.S. Received December 23, 1913,—
Read February 5, 1914.)

(Abstract.)

1. In the preparation of sectional schemes for the flowers of *Welwitschia mirabilis*, in different stages of development, several points of interest were noted as tending to throw light on the previous history of this unique floral form.

2. Evidence is adduced to show that the primary structural features of the flowers are referable to an anthostrobiloid condition closely comparable with that of *Cycadeoidea*, now expressed in a phase of minimum reduction, and to be regarded as an example of heterophyletic convergence to a simple floral construction in the gymnospermic condition.

3. Secondary features of biological interest are mainly consequences of xerophytic specialisation in the inflorescence; condensation of the whole system to a "cone" necessitates the extreme flattening of the flower in the transverse plane, which has led to confusion in the interpretation of the facts of development; the andræcium is represented by a true whorl of six members.

4. Similarly, secondary clisanthly in the cone mechanism necessitates special features in the individual flowers, and accounts for the long exerted micro-pylar tube of the ovulate flower, and the protrusion mechanism of the staminal tube in the sterile flower.

5. The working mechanism of the latter is clearly indicated by remarkable phenomena of the storage and subsequent disappearance of starch in the andrœcial region; while similar phenomena of starch storage and depletion in the gynœcial region illustrate the progression from a simple "drop-mechanism" to a copious exudation of sugar and the adaptation of the structure to entomophily.

6. The nectary region of the ovule is retained by the gynœcium of the sterile flower for the same function, and vascular bundles supplying fluid for this purpose are not necessarily vestigial. Entomophily is thus probably antecedent to dicliny.

The Influence of the Position of the Cut upon Regeneration in Gunda ulvæ.

By DOROTHY JORDAN LLOYD, B.Sc., Bathurst Student of Newnham College, Cambridge.

(Communicated by J. Stanley Gardiner, F.R.S. Received January 14,—
Read February 19, 1914.)

I. INTRODUCTION.

In 1899 Hallez (4) made the generalisation that the most important difference between the regeneration in Triclad and Polyclad Planarians was to be found in the fact that fragments of the former could regenerate in the absence of the central nervous system, whilst in the latter some portion of the cerebral ganglia must be present in order for regeneration to take place. Child (1) has confirmed the fact that the presence of cerebral ganglia, or at least intact nerve roots, is necessary for regeneration of the anterior end and sense organs of Polyclads. The experimental work by the same and other authors has also established that, among Triclads, the genus *Planaria* is able to regenerate completely in the absence of cerebral ganglia. The following notes, however, show that in another Triclad genus, namely, *Gunda*, anterior regeneration is, as in Polyclads, dependent on the presence of the central nervous system.

The experiments described below were carried out in the Plymouth Laboratory of the Marine Biological Association during the spring of 1913. I am greatly indebted to the director and staff of the laboratory for constant kindness during the course of my work at Plymouth. I also stand under