

the more or less conical lid being prevented from projecting outwards had become invaginated into the cavity.

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DESCRIPTION OF THE FIGURES ON PLATE IV. ILLUSTRATING  
F. W. OLIVER'S NOTES ON FOSSIL FUNGI.

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FUNGUS ON ALETHOPTERIS.

- Fig. 1.—Section of a portion of a pinnule of *Alethopteris aquilina* cut parallel to the surface. At *a* one of the pockets filled with fungal spores is cut through.  $\times 50$ .
- Fig. 2.—Vertical section of part of a pinnule; the midrib is on the extreme right. *a*, *b*, *c* and *d*, the receptacles of the fungus.  $\times 20$ .
- Fig. 3.—Cross-section of another pinnule; *a* and *b* fungal receptacles.  $\times 20$ .
- Fig. 4.—Part of the boundary wall and a few spores from one of these receptacles. The spores appear to be attached to hyphae coming from the wall.  $\times 625$ .
- Fig. 5. A single spore.  $\times 1250$ .

FUNGAL SPORANGIA FROM SEEDS.

- Fig. 6.—Three sporangia in series, from the nucellus of *Polylophospermum* resembling those belonging to *Grilletia*, Renault and Bertrand.  $\times 600$ .
- Fig. 6a.—Another detached sporangium from the same source.
- Fig. 7.—Portion of the wall of the nucellus of *Stephanospermum caryoides* cut in longitudinal tangential section. *mw*, wall of macrospore; *t*, tracheal sheath of nucellus; *np*, remains of parenchyma of nucellus; *c*, nucellar epidermis; *a*, *b*, *c*, supposed sporangia of a *Grilletia*-like fungus.  $\times 85$ .
- Figs. 8, 9, 10.—Three examples of the supposed sporangia, 8 and 10 shew the oval operculum with its characteristic furrow (*a*); in 9 the supposed operculum appears to have been ground away, but traces of the furrow remain. The cells upon which the oval bodies lie belong to the parenchyma of the nucellus.  $\times 850$ .

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A CONVENIENT FORM OF POTOMETER.

[TEXT-FIG. 1.]

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THE apparatus that forms the subject of this note does not lay claim to any special originality, and is merely a convenient modification of a form that I have used for a number of years.

The corked bottle is provided, preferably, with an india-rubber cork with three holes bored through it. One of these takes the bent glass tube ( $\tau$ ) which has a fairly fine tubulus, such as is ordinarily used for a potometer. It is important that this tube should not project beyond the lower surface of the cork, as otherwise any air that may accumulate, or be present, above the water inside the bottle cannot easily be got rid of.

The middle hole is destined to receive the stem of the shoot of which the rate of transpiration is to be measured, whilst the right-hand hole allows a thistle funnel (F), provided with a stopcock, to pass through it.

The chief advantage in the rubber cork lies in the ease with which the plant stem can be passed through it without injury, and gripped so as to be air tight. In order to do this, a blunt cork-borer smeared with oil or vaseline, and somewhat larger than the diameter of the hole is worked through it. The shoot is then passed into the tube of the cork-borer, and the latter withdrawn. The stretched rubber contracts upon the stem and if a shoot of appropriate thickness has been chosen, a perfectly air-tight enclosure is the results as soon as the cork is compressed by the

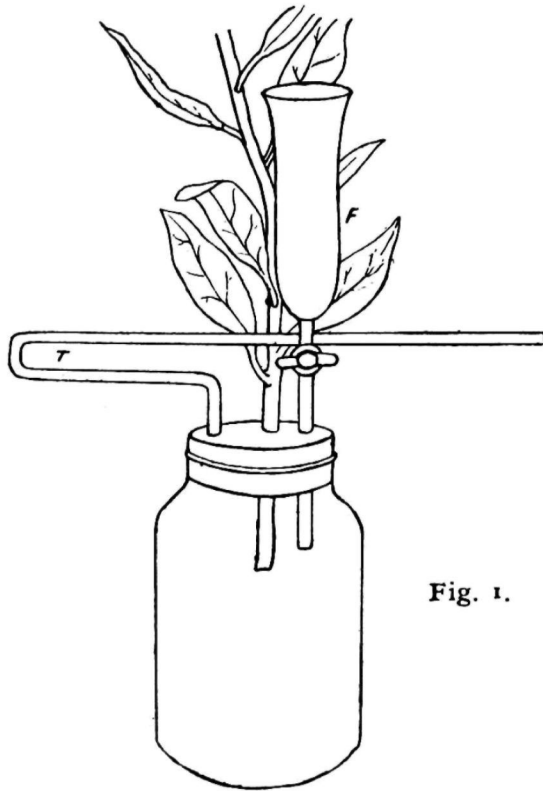


Fig. 1.

neck of the bottle. It should be observed that only woody stems are suitable, as otherwise there is the risk of the tissues being too much compressed to allow of the free passage of the transpiration current.

To start the apparatus, after the cork is provided with its proper complement of tubes, funnel and shoot, all that is required is to fill the bottle with water and then to press in the cork. The funnel (which of course must be higher than the horizontal limb of the tube T) is filled with water, and the tap opened so as to allow

water to pass into the bottle. Any air that may be present is driven out through the glass tube, which then fills with water.

The particular advantage of the apparatus lies in the ease with which an experiment may be started. When not in actual use, as the water is transpired of course air follows the column of water into the bottle, but this can at once be ejected by allowing water to flow from the funnel, and an observation taken without any disturbance of the plant under investigation. It may be added that 20 inches is a convenient length for the upper limb of the glass tube, but of course it can be made as long as may be desirable, at least within the limits of practical rigidity.

J. B. FARMER.

## THE DISTRIBUTION OF THE IRISH FLORA.

UP to the present date the flora of Ireland has usually been analysed according to the eight types of distribution, established by H. C. Watson<sup>1</sup> for Great Britain, namely:—

1. British type - species occurring throughout Britain.
2. English type - „ „ in the south of Britain.
3. Scottish type - „ „ „ north of Britain.
4. Intermediate type - „ „ chiefly in Mid-Britain.
5. Highland type - „ „ „ in the mountains.
6. Germanic type - „ „ „ in East England.
7. Atlantic type - „ „ „ in West „
8. Local type, including species occurring in a few localities.

In the first portion of an extremely interesting paper, Mr. Lloyd Praeger<sup>2</sup> gives an account of the distribution in Ireland of Watson's types. A large number of common plants (377 species) are of purely British type; only eight of those occurring in Britain are absent (*e.g. Avena pratensis*), these being mostly of southern distribution (British-English type). The English type decreases from S.E. to N.W., being most common in Dublin, Wicklow and Wexford, whilst the Scottish type is concentrated in the North and from there extends down the coast on either side. Whereas a considerable percentage of the former type owes its presence in Ireland to the operations of man, the latter is purely native. The abundant occurrence of plants of English type in Clare is curious, and is probably correlated with the presence of limestone surfaces in that county. The Highland type is not very abundantly repre-

<sup>1</sup>Cybele Britannica, I. 43 (1847), iv. 409 (1859), and Compendium of the Cybele Britannica, 23 (1868-70).

<sup>2</sup>Proc. Roy. Irish Acad. Vol. xxiv., Sect. B, Part 1, 1902, pp. 1-60.

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