

by observation of the increase of intensity (about thirty times) of the Hg line 2536.7 in presence of Fe_3O_4 bombarded by α -rays. Spectra in the visible region show an important increase of the visible triplet 5461, 4358, 4047, in presence of the iron oxide, and especially of the 5461 green line which is not visible at all when Fe_3O_4 is not present.

ANDRÉ LUYCKX.

Laboratoire de Chimie Physique,
Université de Louvain,
Feb. 21.

¹ *Proc. Roy. Soc.*, A, 72, 196, 409 (1903); 76, 488, 130 (1905).

² *Phys. Z.*, 6, 688 (1905); 7, 672 (1906).

³ *Proc. Roy. Soc.*, A, 89, 89 (1914).

⁴ *Astrophys. J.*, (1907) and 54, 149 (1921).

⁵ *Z. Phys.*, 29, 345 (1924).

Eddy-Current Resistance in Fluids due to Rotation

THE well-known 'Larmor analogy' between the deflecting force exerted by a magnetic field upon the motion of electrically charged bodies and the 'Coriolis' force which similarly deflects a moving body relative to a rotating system of reference, suggested to me that the resistance to motion due to electrical eddy currents experienced by a conducting body rotating in a magnetic field should be paralleled when a rotating body of fluid is given a second rotation, for example, about a second non-parallel axis. The experiment, which was demonstrated at the recent meeting of the Australasian and New Zealand Association for the Advancement of Science in Auckland, N.Z., does, in fact, rather strikingly exemplify the gyro-magnetic analogy. A spherical vessel of metal or glass, filled with water and provided with an axle that turns in horizontal bearings and rotated (long enough for the water to take up the rotation) comes very rapidly to rest if set up on a rotating table—or even if the frame in which the bearings are set is turned while held in the hand.

With a glass bowl, the actual eddy currents in the water are made conspicuously visible by the movement of bubbles formed from the residual air when the bowl is not completely filled.

KERR GRANT.

University, Adelaide.
Feb. 24.

Fossil Pollen in Scottish Jurassic Coal

I HAVE recently made an examination of the microspore content of a sample of coal of Jurassic age that occurs at Brora, Sutherlandshire. The seam rests upon strata of the Estuarine Series (g^7), and has as its 'roof-bed' Kellaways Rock (g^{10}). The seam proves to have a rich content of pollen, principally of genera of conifers belonging to the Abietineæ, but, in addition, it is interesting to record the presence of pollen of the types that characterize the Nymphaeaceæ among the dicotyledons.

Water-lily pollen possesses certain characters that make recognition of the type easy. These characters are illustrated diagrammatically in Fig. 1, and may briefly be summarized as follows:

(1) A narrow furrow region (f), which in form is ring-shaped or open at one or both ends.

(2) A region, the operculum (o), enclosed by the furrow ring, in area always less than a hemisphere. The exine of the operculum may differ from that of the part of the grain outside the furrow ring in being distinctly thinner or differently ornamented (1, d).

(3) In the smoother *Castalia* species (1, d), the

exine tapers in thickness towards the furrow ring, merging with the latter without a marked rim.

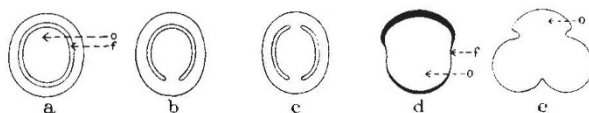


Fig. 1.

(4) In the genus *Nelumbium* (1, e) a third furrow is present, differing slightly in shape from those bounding the operculum. A very distinctive feature of *Nelumbium* pollen is that when viewed from the poles, the furrows do not divide the grain into three equal parts, as normally do the three furrows in other dicotyledonous types. In other words, bilateral, not trilobate, symmetry characterizes the *Nelumbium*

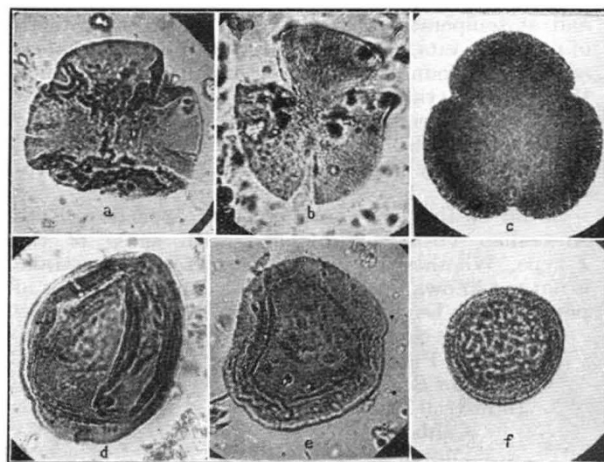


Fig. 2.

- (a) *Nelumbium* TYPE, JURASSIC COAL, BRORA; POLAR VIEW SHOWING OPEUCULAR FURROWS.
 (b) *Nelumbium* sp., TERTIARY COAL, SCOTLAND, POLAR VIEW.
 (c) *Nelumbium nuciferum* GAERTN., MODERN SPECIES.
 (d) *Nelumbium* TYPE, JURASSIC COAL, BRORA; LONGITUDINAL VIEW, SHOWING THIRD FURROW (CENTRE) AND OPEUCULUM.
 (e) *Castalia* TYPE, JURASSIC COAL, BRORA; SHOWING OPEUCULUM AND BOUNDING FURROWS.
 (f) *Castalia crassifolia* HAND.-MAZZ., MODERN SPECIES; OPEUCULAR FURROWS ON EITHER SIDE.
 ALL FIGURES \times APPROX. 325 DIAMETERS.

type. As this distinction is probably a primitive feature, it may be expected to occur more frequently in fossil than in modern pollen types, and it should therefore be looked for in all work in fossil pollen, particularly the more ancient the material under examination.

As I think is evident from the photographs reproduced in Fig. 2, the water-lily pollen in the Brora coal already shows clear differentiation into the types characteristic of the modern genera *Nelumbium* and *Castalia*. Other genera of the Nymphaeaceæ may also be present. Except for some forms possibly representing *Magnolia* and its allies, no other dicotyledons appear to be represented.

JOHN B. SIMPSON.

Geological Survey Office,
19 Grange Terrace,
Edinburgh.
March 16.