sexual behaviour terminating in an attack on the female. Pavlov speaks of these phenomena as hypnotic, and ascribes them to special types of spread of inhibition in the cortex.

We have thus similar modifications of normal action due in one case to glandular deficiency, in another to depressant external conditions, and in a third to psychological causes. Further investigation of such phenomena, whether in the field or the laboratory, should be of great interest for the science of animal behaviour.

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Rings of Cork in the Wood of Herbaceous Perennials

APPARENTLY the only plants reported to have successive rings of true cork in the wood are certain species of *Sedum*[1,2]. There are, however, the closely related cases of *Gentiana cruciata*, *Aconitum Lycoctonum*, *Salvia* spp.[3], *Delphinium* spp.[4,5], and *Mertensia* spp.[6], in which cork develops to some extent in the xylem, but is rarely found there in the form of concentric layers. In these plants, as also in *Sedum* spp., internal cork is said to arise in connexion with the splitting of the rhizome or root into strands and the segregation of vascular bundles directly connected with effete leaves and annual shoots. There are also on record[7] examples of localised and anomalous cork layers round groups of vessels in the wood of various species. Finally, there is the case, recently described by Lemesle[8], of concentric suberised layers in the wood of *Hymenocrater* spp.; but here, no cork cambium is formed and the suberised layer is properly described by Lemesle as a pseudoperiderm.

My discovery of concentric rings of periderm, as a constant feature, in the wood of older subterranean organs of several herbaceous perennials, namely *Epilobium angustifolium*, L., *E. latifolium*, L., *Gaura coccinea*, Nutt. and *Artemisia dracunculoides*, Pursh. is therefore of interest. In the first of these species, the horizontal roots, likewise the underground 'stumps' of former aerial stems, may live for many years, and each year may send up flowering shoots. As many as twenty concentric rings of periderm have been observed in the wood of old roots, while numbers ranging from one to ten have been commonly encountered. The 'wood' of this species includes not only vessels and fibres but also a large proportion of phlœm and parenchymatous elements. Each summer a zone of periderm arises in the parenchymatous part of the wood formed near the close of the previous summer, or less frequently in a more deep-seated position in the wood. When mature this interxylary periderm commonly consists of two or three layers of cork cells with alternating layers of non-suberised cells.

The point of chief interest here is the development of interxylary periderms in relation to the dying down of flowering shoots and the origin of new annual shoots. Each new interxylary periderm arises in June, between the wood that served last year's aerial stem and the thin sheet of new wood connecting with the young shoots. Above the point of insertion of the uppermost of the new shoots, very little, if any, new xylem develops, and in that region this internal periderm makes connexion across the phlœm with an external periderm. Furthermore, the interxylary periderm extends as a continuous layer throughout the entire subterranean system with the exception of the younger roots. As a consequence, the various tissues in direct connexion with the new shoots are segregated by a barrier of cork from necrotic tissues as well as from the older wood. The younger parts, fitting in sleeve-like fashion over the older decadent cylinder, are therefore protected against possible desiccation and invasion of destructive organisms. For, as the 'stump' of a floral shoot disorganises, a broad, hollow path, bordered mainly by soft tissues, becomes exposed to various external agencies. Thus the interxylary periderm may function in somewhat the same way as does suberised tissue below the abscission layer of a leaf. Persistence of plants in particular locations may be largely due to the protection afforded by this internal suberised barrier.

In both species of *Epilobium* and in *Gaura coccinea*, fission of older roots into strands commonly occurs. This phenomenon is related to the occurrence of concentric rings of interxylary cork and to the mode of production and dying back of shoots and of rootlets. Nevertheless, fission in these species differs in certain important respects from all previously described examples[2,3,4,5,6] of this phenomenon.

The discovery of interxylary cork reported here raises questions regarding the general occurrence and the significance of the internal suberised barrier as well as questions concerning the physiology and ecology of perennating herbs devoid of this structural feature. I would welcome references to literature and comments bearing upon these problems. Detailed descriptions of the subterranean organs of the species in hand are now being prepared for publication.

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The Neutrino

ALTHOUGH it seems very unlikely that neutrinos, after having been emitted in a nuclear process, give rise to any detectable ionisation[1], we would like to point out that it is not impossible in principle to decide experimentally whether they exist.

One possible experiment would be to check the energy balance for the artificial β-decay. Take, for example, the process

$$B^{10} + \alpha \rightarrow N^{13} + \text{neutron}$$
$$N^{13} \rightarrow C^{13} + e^{+} + \text{neutrino}.$$

One can safely assume that if the positive electron is emitted with the greatest possible energy, the kinetic energy of the neutrino will just be zero. The balance of energy in this case will therefore determine the mass of the neutrino. For this purpose one would have to know the mass defects of B^{10}, C^{13} and the