than a post-mortem decomposition product, in as much as it begins to be evolved very shortly after the seaweed has been gathered and is not apparently given off by material which has been dipped in boiling water.

The natural occurrences of methyl sulphide are not numerous, and it is worthy of note that one of these is petroleum from Ohio; the finding here recorded is therefore at least not inconsistent with the theory of the algal origin which has been suggested for some oil-fields.

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Germination of Resting Fungal Spores

I HAVE read with interest Mr. Robert McKay's letter[1] on the germination of oospores of *Peronospora Schleideni*. He notes the remarkably persistent oogonial wall, which "forms an additional protective layer" around the oospore, and the still more persistent oospore wall. In germinating these highly resistant spores he lays claim to no special method: in course of time, in this case of years, the spores germinate when placed in water.

During the last ten years, I have spent a considerable amount of time in an attempt to devise a reliable method of obtaining the germination of the similar, though not quite so resistant, oospores of *Phytophthora Cactorum*, in sufficient numbers for cytological study. After trying many and varied 'agents', I finally obtained germination in quantity by exposing three-months old oospores to a temperature of 1°–3° C. for a month and then soaking them for one or two weeks in water, kept constantly renewed. It appeared later that the spores could be older, and the refrigeration period longer, and still give an equally good result[2].

When comparing my experiments with those of other workers upon the germination of resistant spores, I felt that we had no logical method of approach to the problem. It was by trial and error that results were finally obtained: in some cases one method, in others another, chanced to be effective. At the risk of appearing to state the obvious, I would direct attention to the following facts that suggest a line of attack in such experiments.

(1) That the wall of these resistant spores is, as a rule, at least two-layered: the inner thick and of a reserve substance such as a hemicellulose; the outer thin and of 'fungus cellulose', and practically impermeable.

(2) That the substances composing both wall layers are in a colloidal state.

(3) That germination cannot take place until (*a*) the spore has fully matured—a process, not at all understood, which involves a time factor; (*b*) the wall is rendered sufficiently permeable to admit water and oxygen.

(4) That the various devices tried and claimed as agents initiating germination (namely heat, cold, acids, carbon dioxide, bacteria, etc.) appear to do one of two things, provided they are of a suitable intensity or concentration: (*a*) form small cracks in the wall, (*b*) bring about a change of colloidal state. (Agents such as bacteria may be effective through carbonic acid produced.)

(5) That since the spore, though dormant, is a living thing with carbon dioxide accumulating within it, the change in the nature of the wall will in course of time come from inside, that is, time is a factor in germination as well as in maturation.

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[1] NATURE, **135**, 306, Feb. 23, 1935.
[2] *Trans. Brit. Myc. Soc.*, **15**, 294–310; 1931; and **19**, 157; 1935.

Extrusion of Cells in the Tubules of the Epididymis

MR. P. G. 'ESPINASSE has remarked[1] that the extrusion of nuclei which has been observed to occur from the epithelium of the oviduct in the mouse could not be closely related, as had been suggested, to the œstrous cycle. His conclusion on this point seems to derive indirect support from a comparable phenomenon which takes place in the epididymis of the mouse and rat. In those tubules of the epididymis which are lined with a single layer of columnar cells the nuclei of which are close to the basement membrane, a process of cellular extrusion is particularly well seen, though it occurs also in other tubules where the epithelium is cuboidal.

Microscopic sections suggest that the actual process could be reconstructed as follows: Here and there a nucleus becomes separated from the uniform row of its fellows and advances towards the lumen of the tubule. As it approaches the free surface, it may be preceded by a bulging of the cytoplasm into the lumen. Eventually the nucleus, sometimes surrounded by cytoplasm, becomes detached and lies free in the cavity of the tubule. This extruded body often appears to be a living cell, showing no pyknosis or other obvious signs of degeneration.

Whatever significance may be attached to the phenomenon, it appears to be of frequent occurrence in the healthy epididymis of the adult mouse and rat, and cannot readily be attributed to any periodical cycle connected with the sexual function.

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[1] NATURE, **134**, 738; 1934.

Hydrogen Ion Concentration of the Alimentary Canal in Psychodidæ (Diptera)

INSECT physiology, and particularly the physiology of digestion, is more or less intimately correlated with the life-history and other environmental factors. An attempt has therefore been made to find out the correlation, if any, between the hydrogen ion concentration of the alimentary canal and the different feeding habits in the family Psychodidæ, which contains two sub-families, namely, Phlebotominæ and Psychodinæ. The former is easily separable from the latter by its blood-sucking habit.

The entire alimentary canal of four common species belonging to two different genera was dissected in a minimum quantity of bromthymol blue and carefully laid out on a slide. The subsequent reaction