

	Lasioderma unsterilized	Lasioderma sterilized	Sitodrepa unsterilized	Sitodrepa sterilized	Ptinus
Whole diet	++++	+++	++++	++++	++++
No thiamin (B ₁)	++++	—	++(+)	—	±
No riboflavin	++++	—	++++	—	—
No nicotinic acid	++++	—	++++	—	+
No pyridoxine (B ₆)	++++	—	++	—	±
No pantothenic acid	++	—	++	—	++
No choline chloride	++	—	++	+	++
No ϵ -inositol	++++	+++	++++	++++	++++
No <i>p</i> -aminobenzoic acid	++++	+++	++++	++++	++++(+)

Efficiency of the whole diet is indicated by + + + +. The whole diet consists of casein 50, glucose 50, cholesterol 1, insoluble part of yeast 5, McCollum's salt mixture 2, water 15 parts; wheat germ oil 7 mgm./gm.; thiamin, riboflavin, nicotinic acid, pyridoxine, pantothenic acid and *p*-aminobenzoic acid (50 μ gm./gm. of the dry diet); choline chloride and inositol (500 μ gm./gm.).

absence of choline, while the normal larvæ grew quite well in the absence of any of these vitamins (except thiamin). The results obtained with *Lasioderma* are similar, the only difference being that sterilized larvæ, in the presence of all the vitamins, or in the absence of inositol or *p*-aminobenzoic acid, grew slightly more slowly than normal ones.

It had been suggested before^{2,3} that the role of intracellular symbionts in insects might be to provide accessory food substances, but this is the first experimental evidence in support of that suggestion which has yet been brought forward. Full details of this investigation will be published elsewhere.

We gratefully acknowledge a Government grant of the Royal Society, which, partly, made this work possible.

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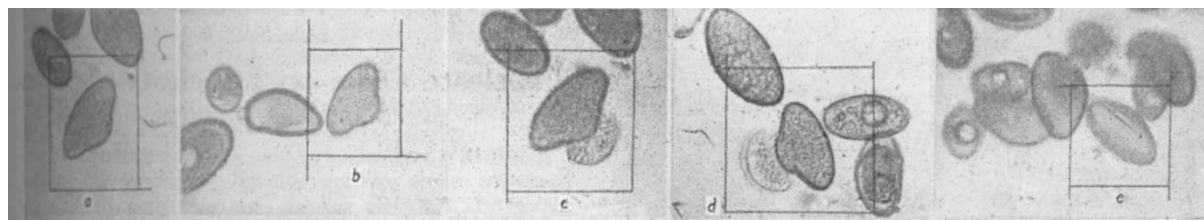
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Germination of the Sporangia of *Coelomomyces Keilin*

ONE of us (J.M.) has found several fungal infections in mosquito larvæ in Northern Rhodesia. The sporangia appear similar or related to those described by Keilin¹, Iyengar² and Walker³, and we tentatively relegate them to the genus *Coelomomyces* K. So far as we know, no previous worker has

and the thin internal membranes appear; (c) two thin membranes are now visible, and the contents of the sporangium flows out and is confined within the inner of the thin membranes; (d) the two thin membranes are now easily visible and are more widely separated. This, unfortunately, was the last photograph of the actual germination that could be taken. The next, and by far the most spectacular phase, was the sudden coming to life of the zoospores. Up to stage (d), no separate zoospores could be seen because of the close packing in the sporangium; with the extrusion of the inner membranes, however, the pressure is released and the spores come to life. Once having started to move around they gradually gain speed until the interior of the sporangium and the extruded thin membranes are a seething mass of zoospores. In a few minutes after the beginning of movement, the zoospores contained within the extruded membrane find their way out to the exterior and immediately swim out of the field of observation. More zoospores from inside the sporangium take their place, and gradually the whole empties itself and all that is left is a sporangium with a rent through which the thin membranes had extruded (e).

The time taken to reach the stage shown in (c) may be a day or two. Once the zoospores flow into the extruded thin membranes, complete liberation takes place in a few minutes. During the act of leaving the sporangium one does not gain the impression that the extruded membranes suddenly burst, because they appear to remain intact, and zoospores leave gradually as if they were capable of penetrating the thin membranes without rupturing them. The zoospores have a single flagellum. The body measures about 4 μ , and the length of the flagellum is approximately four times this length. They progress head first and the flagellum is not undulated but whipped rather stiffly from side to side.



observed the germination of sporangia of the genus *Coelomomyces*, though Keilin appears to have had a shrewd guess as to what was likely to happen.

The sporangia, all thick-walled, which we succeeded in getting to germinate were found in a larva of a species of *Mucidus* (Dipt. Culicidae). The process of germination is well shown by the accompanying photographs. A sporangium when about to germinate first loses its oil droplets and the interior becomes granular. (a) A slight bulge appears on one side; (b) the bulge enlarges, the outer hard shell ruptures

We are indebted to Dr. S. Selby of Johannesburg for the loan of his microphotographic apparatus, which made it possible for us to make a large number of exposures with the minimum delay.

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