small breeder. After ten days, six adults and six parasites were observed and were left confined in the cage. One of the first peculiar symptoms observed in these cocoons was a darkening in colour of 16 of them; the colour of the normal cocoons being light chocolate, while in these cases the colour was of a pronounced dull chocolate tinge. Four more adults emerged on subsequent occasions. Although no signs of *Isaria* were then noticeable on the darkening cocoons some of them were dissected and microscopically examined. Two of the examined cocoons showed the interior walls lined with white fungus hyphæ; others showed fungal hyphæ in the dead adult's body. Later on white fluffy patches occurred externally rather suddenly on most of the remaining cocoons. From the appearance of these fungous growths it was evident that they were formed by the *Isaria*. About two months after beginning the experiments, the fungi formed the well-known forked sporophores and the microscopical characters proved the fungus to be *Isaria*. Spores had been produced abundantly at very early stages and no doubt had become disseminated throughout the cage. When about three months after starting this experiment I examined the interior of the cage again, I found the whole moss superficially and throughout the layer studded with fine whitish colonies of fungi. These were examined and found to be small colonies of *Isaria*. These colonies remain up to date very minute, but never disappeared. New ones constantly appeared and at present the moss is peculiarly studded all over with minute *Isaria* colonies. These colonies having no supply of congenial food remained small and were of course of starved appearance. I next separated a few and transferred them to a petri dish containing nutrient gelatine. Here they made three days' rapid growth and no doubt would have covered in the usual way the whole surface but for the appearance of gelatine liquifying bacteria which put a premature end to my observation. Nevertheless, it was proved repeatedly that the fungus spots consisted of *Isaria farinosa* and no other. It was surprising to me that never throughout these experiments, was I able to observe other fungi; like *Penicillium* and other common moulds. Several important conclusions may be drawn from these experiments :

"1. Granted that the cocoons used in experiments A and B were in equal condition as far as their being alive is concerned, it is shown from the greater number of adults or parasites emerging from cage (experiment A) and from the infection of a large proportion of cocoons in experiment B that the fungus *Isaria farinosa* is truly parasitic on larch sawfly cocoons.

"2. It is evident that spore infection of the cocoons had taken place. On one occasion I observed the infection of the adults; they died rapidly but remained uninfected.

"3. The fungus *Isaria farinosa* is capable of vegetating saprophytically for a considerable length of time, provided sufficient moisture is available. The conditions under which this mode of life was observed were close to natural conditions.

"4. Owing to this saprophytic mode of life there remains little doubt that the pupating larvae of the larch sawfly infect themselves when taking to the ground for pupation. The colonies observed in the moss appeared about the end of July and continued to show up to the end of September, during which time, of course, the pupation[1] of the larch sawfly takes place in nature."

"I have to record some observations on another experiment undertaken to discover whether it is possible to infect larch sawfly adults and cocoons with spores of *Isaria* from pure cultures. For this purpose a flat glass dish containing sphagnum was sterilized on three successive days in an hot air sterilizer. Although the moss became brown in colour it still retained satisfactorily moisture subsequently introduced. I then placed a number of living adults and cocoons in this apparatus and dusted the whole with spores that had been produced in a pure culture of *Isaria*. The living adults had all died after three days and

[1] *Note.*—By "pupation" Mr. Gussow refers to the entering of the soil by the larvæ to spin the cocoons in which, of course, they hibernate and, strictly speaking, do not pupate until the following spring.