ATTACK OF FUNGI ON THE WOODEN LIDS OF WATER CULTURE JARS

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An unusual case of the rapid destruction of wood by fungi was observed on the wooden lids of water culture jars. The wooden lids in question were used to cover one and one-half liter water culture jars, and the plants which they supported were those of Zea Mays. These lids which were made of basswood, were 15 cm. square and 14 mm. thick. In the center of each was a hole 13 mm. in diameter to support the growing seedling. At one side of this was another hole 7 mm. in diameter through which passed a glass tube which conducted air for the aeration of the culture solution. The distance between these two holes, on centers, was 25 mm. A top view of one of these lids is shown fig. 1 as it appeared

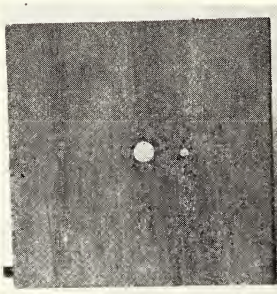

Fig. 1

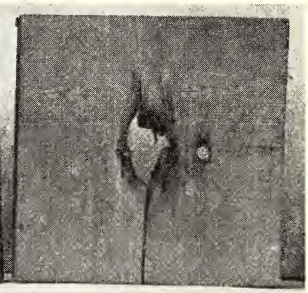

Fig. 2

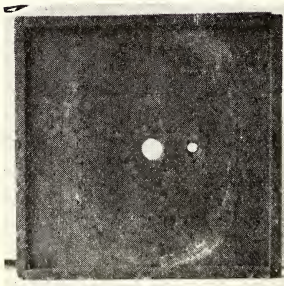

Fig. 3

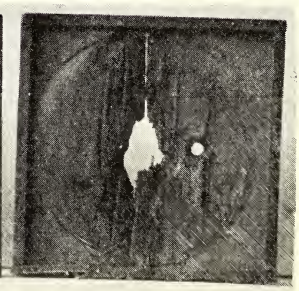

Fig. 4

when the culture experiment was started. The weight of the lids varied somewhat. At the beginning of the experiment the weight of the lid shown in fig. 2 was 175 grs. All of the lids used had, previously to the experiment, been boiled in 52°C. paraffin until they were thoroughly saturated. This was repeated several

times in order to exclude the air and to infiltrate the wood as thoroughly as possible with the paraffin and to prevent the absorption of moisture and subsequent warping. The corn cultures of this experiment were allowed to grow for eight weeks. Shortly after they had commenced growth the wooden lid fig. 2, which was clear of all infection at first, began to show some dark colored areas on the top not only around the corn seedling but also around the opening through which the glass tube projected. This became rapidly larger around the seedling which would have dropped through the lid into the culture solution but for the presence of the "prop roots" and the rapid increase in diameter of the stem. Observing fig. 2 it will be seen that the wood was removed for a considerable area and of irregular extent and that a crack had appeared reaching to one side. The top view of the lid fig. 1, which was not used for a culture before this time, shows the exact condition of fig. 2 at the beginning of the experiment. Fig. 4 gives a view of the underside of the same lid shown in fig. 2. In this view the fungal destruction is much more apparent. Here is well illustrated the rapid removal of wood by the action of the fungus especially in long deep rifts. This is so deep in one place as to make clear the cause of the split shown in fig. 2. It is really hardly a split, in a way, but is an almost complete removal of the wood to the top. The other photograph, fig. 3 shows the under side of another such lid a few days after the fungus made its appearance. It will also be noticed from figs. 3 and 4 that the lid had been bordered by narrow strips. The lid shown in figs. 2 and 4 was only one of several used, and two of which were attacked in the way above mentioned by the fungus. The lids did not become wet from the lower surface by this culture solution. However, it is of course well known that wood of various kinds are often attacked and destroyed by such an agency. Nevertheless this brief account is unusual from the standpoint of the rapidity with which the destruction progressed under the conditions present. Having previously obtained the weight of the lids, the one shown in fig. 2 was at first 175 grs., as above stated. At the end of the experiment the lid shown in fig. 2 had lost 15 grs. in weight. Of course when available porcelain lids are preferable fitted with suitable corks and these boiled in paraffin[1]. The addition of a .05% solution of neutral potassium chromate will according to the method of Klebs[2] prevent the growth of bacteria and fungi and at the same time does not harm Algae or higher plants. The photographs of the lids shown in figs. 2, 3, and 4 indicate the extreme care that must be observed in experiments of this kind to prevent the difficulty here mentioned.

A STUDY OF POLLEN, VI

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The use of the petri-dish method as described in my previous papers on the study of pollen, have shown that this is the best method for investigation of this kind. In all cases it is advisable to use petri-dishes made from a good quality of glass with a perfectly smooth top and dishes having as little depth as possible. Only distilled water should be used in the lower half of the petri-dish to supply moisture and the previously advised precautions taken to avoid condensation. This latter can hardly be advised too strongly since when heavy condensation occurs the drop of the solution containing the pollen grains may be seriously altered. In fact, condensation may sometimes occur in various places on the

[1]Pfeffer, W. Pflanzenphysiologie 1894 Bd. 1 p. 413.
[2]Klebs, G. Untersuchungen aus dem Bot. Inst. Zu Tübingen 1886-1887 Bd. 2 p. 492.