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Growth is very rapid, Text Fig. 1 showing an average plant which has attained the size represented 72 hours after the spores were sown in the malt extract. Though cross walls are difficult to discern in the young plant in untreated cell cultures, branching can usually be made out to take place just below a septum. The only change observable in the spore during germination is an immediate reduction in size of the central globule and this reduction in size continues until it finally disappears. The protoplasm of the hyphae is colorless and shows minute highly refractive bodies. After four or five days vacuolation is noticeable in the older cells.

In connection with the germination tests one more fact is worthy of note. In some of the old mounts it was observed that dense fuzzy or witches' broom-like masses appeared on some of the hyphae. The same growths were encountered in some tube cultures. They proved on examination to be made up of very numerous short branches, strictly localized and of such an appearance as to lead one to expect conidia, but none were found. Their significance is unknown. Brefeld (7) noted and figured the same thing.

IV. CULTURAL STUDIES.

(a) *Historical:* Prior to the appearance of Hartig's "Wichtige Krankheiten der Waldbaume" in 1874 and his "Zersetzungserscheinungen des Holzes" in 1878 but little was understood about the decay of wood; the latter thesis included accounts of seven species commonly attacking coniferous timber and six causing decay in oak. Hartig was the first to associate a specific decay appearance with a particular fungus and in emphasizing this fact he made his most important contribution. His *modus operandi* involved a complete description of the fungus concerned, a minute account of the destruction of the wood, with many illustrations of the progressive microscopic and macroscopic changes. In no case was there any attempt to establish identity of the causal form by culture or inoculation.

The next contributor of importance in this field was Mayr (26) who in 1884 described in detail the action of two species of *Polyporus* parasitic on birch. But his methods were similar to those of Hartig and likewise included no cultural studies. This statement also applies to most subsequent work; thus in the last fifteen years, while American mycologists have given a very great deal of attention to polypores responsible for the decay of timber and of forest trees, in general the studies have had largely to do with the macroscopic and microscopic changes expressed in