it not possible that we may yet be able to separate matter from energy and thus form some conception of matter pure and simple? When the molecules cease to vibrate what would be the state or condition of matter? Would it still manifest itself to the senses? If so, what properties would it retain, what new ones acquire?

FUNGI PARASITIC INDICATE KINSHIP.

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It is difficult in a short title to express the leading thought of this paper. Possibly it may be expressed as follows: Fungi, when strictly parasitic, as a rule, infest either a single species, or, if more than one, the hosts are not distantly related. It is therefore to these species that have a wider range than a single sort of host that attention is called at this time. Please bear in mind that the word "strictly" is employed in the statement of the proposition. Therefore it may be possible to draw something of a conclusion from instances when a fungus grows with almost equal ease upon a wide range of substances. But this is a matter of secondary importance at the present time. For our purpose a fungus may be considered strictly parasitic when it attacks what appears to be perfectly healthy tissue, as the leaf or stem of a plant in the full flush of its vitality. Let some instances be cited to make the fact emphatic. Three years ago there was an outbreak of trouble in a Jersey cranberry bog. The leaves, blossoms and young stems became distorted with numerous minute galls, due to a microscopic fungus (*Synchytrium Vaccinii*, Th.). The cranberry being a bog plant is under water for a part of the year and the shore plants bordering the bog are likewise submerged for some time as well. The fungus discharges its spores into the water, and they are carried to all parts of the bog and the overflowed neighboring land during the spring floods. During the investigation of the cranberry gall trouble the shore plants came under notice, and it was found that several kinds of them were attacked in a way similar to the cranberry. Two interesting facts were obtained in the investigation; first, that the cranberry gall fungus attacked the shore plants up to a certain well-defined line. If the shrub was low it would bear galls throughout, but a high one had them only upon the lower leaves and branches. In short the gall fungus attacked those parts only that were under water at the time of the floods when the spores were being disseminated in the water. The second interesting fact was that all of the shore plants showing signs of infection were all members of the same family (*encaciae*) with the cranberry. The hosts among themselves are widely different in general appearance, and it was remarkable how dissimilar were the galls upon these various species. Upon the white alder, for example, the galls were large and hairy; while upon the wintergreen and sheep laurel they were smooth. But without going into the details of minute structure there seems no doubt that all forms are of the same species, and while the water must have been well charged with the germs and bathed for days or weeks the entire vegetation of the submerged shore, none but the members of the heath family were affected.

The demonstration is quite complete that the presence of this fungus indicates kinship among the host plants. So strong is this that should a new host be found for this gall fungus the first thought would be that the victim is a member of the heath family of plants.

Similar instances might be mentioned in connection with other fungi, and that almost without number. In the case of fungi attacking fruit the circumstances are somewhat different and this sends us back to the word "strictly" in the original proposition. It may be contended with considerable show of reason that a fruit, particularly if it is nearing maturity, is not altogether alive, but instead, having become the receptacle of various substances to facilitate the dissemination of the maturing seeds within, is passing from the condition of a highly vitalized portion of the plant to a passive condition that will soon be on the verge of decay. This being the case, it is not exceptional to the rule when it is found that a mould that grows upon the tomato may thrive equally well upon the peach or plum. The soft tissue in each case is similar and the fungus does not need to overcome the resisting force, peculiar to each species, that is associated with the living portions of the plant. Should the fungus in question grow also upon the otherwise healthy foliage, of the tomato, peach and plum, the question would be different. It would be a true parasite that was able and willing to flourish upon the fresh products of life, namely, the fruit. The leaf fungi, as a matter of fact, are widely different from those of the peach and plum, and those of the cherry and plum, for example, are often identical; and the hosts are within the same small group.

Passing to a small group of closely related plants; namely, the cucurbits, it is interesting to note how wide spread some of the fungi are preying upon the species. Thus the water melon is frequently badly affected with an anthracnose, which growing in the rind of the maturing fruit causes it to become full of decayed pits. The muskmelon suffers from the same fungus but the texture of the skin of its fruit is so different that the decay might be considered as not the same as the one of the watermelon. A third member of the same family, namely the cucumber, is not exempt from the same enemy, as the accompanying engraving will indicate. This illustration is from a photograph of one of a bushel or more of equally bad specimens met with at a market place. The cucumber being of a softer texture is much more quickly destroyed than the muskmelon or watermelon.

This anthracnose (*Colletstrichum lagenarum* (Pass) E and H.) thrives upon the foliage of the three named hosts causing a leaf blight. It is a true parasite and assists in indicating the close kinship of the hosts.

—"Our Own Birds," by Wm. L. Bailey, published by J. B. Lippincott Company, is an excellent manual for those who wish to become familiar with the common birds of this country. It contains a number of half-tone full-page illustrations, with others in the text.