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THE STATUS OF THE ALGO-LICHEN HYPOTHESIS.

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IN treating this subject it will not be out of place to give first a short history of the growth of knowledge concerning lichens and their structure. The earlier lichenologists knew but very little of lichens as now understood, and comparatively nothing as to their internal structures. As the magnifying power of microscopes was increased, so the knowledge of the lichen thallus was increased. The affinities of lichens to the discomycetous fungi on the one hand and to the algæ on the other were early noticed and commented upon, and some species have been alternately placed among the fungi, then among the lichens, and others have been repeatedly changed from lichens to algæ, and vice versa. Later authors, as Cornu and Tulasne, consider the lichen very near if not belonging to the Ascomycetes, while De Bary, Krabbe, and others place them among the Ascomycetes without any doubt as to that being the proper place for them.[1] Lately Cora and several other genera have been placed among the lichens under the name of Hymenolichens—*i.e.*, lich-

[1] Stahl found the reproductory organs of Collema to be very similar to those of the Discomycetes. Borzi confirmed Stahl's observations by his own. Fünfstück, after a study of the development of the apothecia of Peltigera and Nephroma, believed that "the reproduction is by apogamy, with rudimentary sexual organs, as in Podosphæra among the Discomycetes." De Bary says (Morph. and Biol. of Fungi, etc.): "The formation of the perithecia of lichens from the primordial coils of hyphæ follows in general the same course as that of Xylaria, Polystigma, etc." This is confirmed by the observations of Krabbe, Füisting, and others who have made an extended study of the Cladoniæ, Sphyridium, Lecanora, Lecidea, etc.

Emmerich gives similar results; thus after inoculating rabbits with erysipelas he found that this conferred a certain immunity against subsequent inoculation with anthrax, and also that the destruction of the bacteria was chiefly extracellular, and that the phagocytes made away chiefly with the dead bacilli. Again it is noticed by the author (H. Bitter) that in none of Metschnikoff's works, nor in those of other writers, is it certainly proved that the bacteria are destroyed by phagocytes, and by these alone, and in conjunction with Nuttall he has proved this experimentally.

With regard to Metschnikoff's experiments on frogs at high temperatures, it is obvious that the fluids of the body may become so altered by the increased heat that this fluid is thereby no longer able to weaken the bacteria.

Moreover, a series of observations has shown that anthrax bacilli have always suffered some damage before they became a sacrifice to the phagocytes. On the whole the author inclines to bring in a verdict of not proven.

Physalia in the Bay of Fundy.—In the published lists of Medusæ from Grand Manan, there is no mention of the well-known Portuguese-Man-of-War, *Physalia arethusa*. I am unaware that it has ever been taken from the Bay of Fundy, and up to last summer it was unknown to the fishermen who work in these waters.

During the last summer (August, 1889) several specimens of this interesting Gulf Stream jelly-fish were taken off Grand Manan and brought to me for study. I have also learned that many others have been seen in different parts of the Bay. This unusual appearance of these visitors from the tropics is connected with the great abundance of these animals all along the New England coast during the past summer. Its presence at Grand Manan, where the pelagic fauna is decidedly Arctic, is an interesting fact, as showing how far it may straggle from waters more congenial to its life. In this connection it may not be out of place to mention the fact that these Physaliæ were taken near the "Ripplings," tide eddies several miles off the west coast of Grand Manan, in which is collected at certain times of the tides a most wonderful abundance of free-swimming life. These eddies, which are feeding grounds for many of the larger marine animals, are peopled by a rich variety of marine life of all kinds, brought into its vortices by the extraordinary tides for which the Bay of Fundy is famous.—J. Walter Fewkes.