

II. "On the *Trichophyton tonsurans* (the Fungus of Ringworm)."

By GEORGE THIN, M.D. Communicated by Professor HUXLEY, Sec. R.S. Received February 19, 1881.*

(Abstract.)

When hairs affected with the *Trichophyton tonsurans* are cultivated in cells, the development of the spores on the sides of the hairs can, if it occurs, be observed *in situ* under the microscope. When the attempted cultivation takes place on the surface of a fluid in a test-glass, it is also possible, after maceration in solutions of potash, to decide whether the spores in the hairs have grown out from the surface of the hair, and to distinguish between a growth of adventitious fungi and the growth of the *Trichophyton*.

The paper gives an account of experiments made by the use of cells and test-glasses, which were kept at a temperature of between 92° and 98° F., but in a few instances at the ordinary room temperature. The *Trichophyton* remained sterile in cultivations attempted with a solution of phosphate of soda and tartrate of ammonia, with Cohn's fluid, milk, carrot infusion, turnip infusion, salt solution (0·75 per cent.), egg albumen, egg albumen and potash, and vitreous humour and potash. The only method by which it was grown was by moistening the hairs with vitreous humour. When moistened with vitreous humour, the spores on the sides of the hairs placed in cells were seen to grow into a mycelium, and free growth took place when the hairs were floated on the surface of this fluid in test-tubes. It did not grow in cells when the hairs were immersed in a large drop, nor in test-tubes when the hairs were kept at the bottom of the tube.

The growth observed consisted in a formation of mycelium, which sprouted from the spores in the hairs, and in the formation of spores in the newly-formed mycelium.

The successful cultivations were, with one exception, at the incubator temperature. In the exceptional instance the fungus grew at room temperature, but more feebly and slowly than at the incubator temperature.

It was shown by experiments in which *Aspergillus*, *Penicillium glaucum*, and other fungi grew around the hairs, whilst the spores of the *Trichophyton* remained sterile, that the latter is essentially distinct from the common fungi whose spores are present in the atmosphere.

The development of the spores by the only method found successful could not be relied on as certain in any given case. It was not found

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successful in hairs that had been kept for a period of weeks folded in paper, nor in nineteen cultivations attempted with hairs taken from patients under treatment. The negative value of these latter experiments is diminished by the occasional failure with hairs freshly extracted from untreated cases.

The fact that the spores of the *Trichophyton* will not grow when immersed in vitreous humour, whilst they do grow when only moistened by it, explains why inflammatory exudation from the blood-vessels cures ringworm of the scalp.

III. "*On Bacterium decalvans*: an Organism associated with the Destruction of the Hair in Alopecia areata." By GEORGE THIN, M.D. Communicated by Professor HUXLEY, Sec. R.S. Received February 19, 1881.

(Abstract.)

The author having in several cases of Alopecia areata found bacteria adherent to the roots of extracted hairs, subjected hairs in six selected cases to processes designed to demonstrate the existence of organisms, should they be present, in the substance of the diseased hairs.

In five out of the six cases an object was observed in the hairs which he believes to be a bacterium. It was seen as a rounded or elongated spheroid, and was found frequently in pairs, the long diameter of the two spheroids forming a continuous straight line. Sometimes three were found in line, a delicate rod-shaped sheath enveloping the three. These bodies were, as was shown by the processes to which the hairs were subjected, neither oily particles nor crystals, and they could be distinguished from the granules always present in hairs. In all the cases their size and form were the same, and they had the refractive qualities of bacteria.

In hairs which were only slightly affected they were found between the inner root-sheath and the hair-shaft, and in small clusters on the hair-shaft beneath the cuticle of the hair. In hairs which were much diseased they were found in great numbers inside the cuticle of the hair, in the disintegrated hair substance.

Some hairs were found split into ribbon-like bands not far from the root and the organisms were found on the bands.

They were found only in the part of the hair which is under the surface of the skin, and most abundantly not far from the root.

In seven consecutive cases the disease was at once and definitely arrested by a treatment designed to destroy the vitality of any bacteria which might be present on the surface of the skin, and at the same