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Electroculture

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ling in the soil and partly by damping off. A large proportion of the plants which are attacked after breaking through the ground recover by subsequent healing of the injured shins. After showing that the fungus is dependent upon oxygen for growth, the writer states his belief that the fungus attacks the plants at the surface of the ground because here only there exists a zone with sufficient oxygen and yet not too dry for the growth.

It may be mentioned that the sore-shin fungus of the United States is believed by DUGGAR and STEWART<sup>25</sup> to be *Rhizoctonia*. BALL, however, failed to find the typical sclerotia of this genus in the Egyptian form, so that it is possible that the two forms are not identical, unless the sclerotia have been overlooked.—H. HASSELBRING.

**Electroculture.**—GASSNER, before he was called to the University of Montevideo, had begun some investigations on the effect of electric currents, constant and alternating, which, though incomplete, had some interesting results.<sup>26</sup> The constant current in general proved injurious (*cf.* his results and PLOWMAN'S on galvanotropism noted in this journal). The alternating current, when the alternations were rapid enough, was not injurious because it did not act at all; it was not found advantageous, as LÖWENHERZ reports.<sup>27</sup> It does kill grubs and worms in the soil when not hurtful to plants and may thus be useful practically. With induced currents from a frictional machine, potted barley grew better when electrified for 13–14 hours daily from needle-points above the plants, which accords with the earlier results of LEMSTRÖM (1890) and CHODAT (1892). One notable fact was the threefold evaporation from the electrified plants, as compared with the controls. Even greater differences, 6:1, appeared when porcelain dishes filled with water were substituted for the pots.—C. R. B.

**Palisade cells.**—RAUNKIÆR decides in favor of STAHL'S view, that palisade cells owe their form to light, as against ARESCHOUG'S that transpiration is the determining cause, from his studies upon the palisade of *Scirpus lacustris*.<sup>28</sup> The leaves of plants growing somewhat apart from the clump show equally well-developed palisade cells in the leaf above water and to a depth of 20<sup>cm</sup>. From this point to a depth of 50<sup>cm</sup> the length of the palisade cells gradually diminishes. In similar plants growing crowded and therefore shaded, no palisade cells are distinguishable in the submerged parts, nor in the aerial region up to a height of 30–40<sup>cm</sup>, where they commence to appear. In this case there is clear evidence that the external factor, light, calls forth this differentiation. In other

<sup>25</sup> The sterile fungus *Rhizoctonia*. Cornell Univ. Agr. Exp. Sta. and N. Y. Agr. Exp. Sta. Bull. 186. 1901.

<sup>26</sup> GASSNER, G., Zur Frage der Elektrokultur. Ber. Deutsch. Bot. Gesells. 25:26–38. 1907.

<sup>27</sup> LÖWENHERZ, Versuche über Elektrokultur. Zeit. Pfl.-krankh. 15:137 ff. 1905.

<sup>28</sup> RAUNKIÆR, C., Nogle Iagttagelser og Forsøg over Aarsagerne til Palissadedecellernes Form og Stilling. (Sur les causes qui déterminent la forme et l'orientation des cellules palissades.) Bot. Tidsskrift 27:293–311. 1906.