"middle terrace" in the deltas of various wadis. On physiographic grounds it seems to the reviewer open to question whether this terrace should be put at this time or much later.

Riss-Würm or last Interglacial Epoch. Mediterranean Sea at present level, climate approaching that of to-day.

Würm Glacial Epoch. No notable expansion of the Dead Sea. Formation of lowest terrace of the valleys, a conclusion which is open to question.

Post-Glacial Epoch. Uniform prevalence of conditions like those of to-day.

In the interpretation of rock geology, Dr. Blackenhorn is an expert, but when it comes to the interpretation of such physiographic phenomena as strands and terraces we are unable to accept his conclusions. In the first place he has failed to observe a large number of lacustrine strands which close study reveals at many points and at many altitudes around the Dead Sea. In the second place, he seems to have confused lacustrine and alluvial terraces in various places, and in the third place he has correlated terraces which apparently have no relation to one another. For instance, on page 139, when describing the Araba south of the Dead Sea, he describes a "Haupt Terrasse" with a height of 4 meters and a "Mittel Terrasse" with a height of one meter. The first of these terraces is assumed to have existed ever since the Mindel glacial epoch, and is correlated with a terrace which elsewhere is 150 meters high. He supposes the middle terrace to have originated during the Riis Glacial Epoch, and to have survived the vicissitudes of the Riis-Würm Interglacial Epoch, the Würm glacial epoch, and the succeeding period during which the climate is supposed to have remained in its present condition. Both of these terraces, it must be remembered, are in unconsolidated gravelly alluvium. It seems to the reviewer that they probably are the result of late post-glacial climatic pulsations.

In view of the diversity of results obtained by Dr. Blackenhorn and by other observers the whole question of the history of the Dead Sea from tertiary times onward needs a far more thorough and systematic examination than it has yet received. This is the more necessary since the Dead Sea and Jordan Valley contain one of the best of all records of the Pleistocene history of the drier portions of the world. Dr. Blackenhorn's excellent study of the fundamental rock structure of the region is an admirable basis for such an examination. It is to be hoped that a further step may soon be taken and that by means of a careful instrumental survey of the old strands, terraces and deposits, the physical history of the region during the last hundred thousand years or so may be conclusively determined.

ELLSWORTH HUNTINGTON

SPECIAL ARTICLES

THE PERFECT STAGE OF CYLINDOSPORIUM ON PRUNUS AVIUM

IN the fall of 1910, at the suggestion of Professor George F. Atkinson, the writer began a study of *Cylindrosporium,* as it occurs on species of *Prunus* in the region of Ithaca, N. Y., in order to discover the life history, and the relationship of the organism on the different hosts.

Several sweet cherry trees, which had been severely attacked by *Cylindrosporium* during the previous summer, were noted and the fallen leaves observed at intervals for the appearance of an ascogenous fungus. Early in March developing fruit bodies were noticed in abundance on many leaves, some of which were brought into the laboratory and placed in a moist chamber. After a few days at the room temperature of the laboratory many of the fruit bodies showed mature asci.

Subsequent observations showed that a stroma begins to develop under the *Cylindrosporium acervuli* about the last of August. About the time of leaf fall the acervulus is cut off from the underlying stroma by a compact layer of host tissue two or three cells thick, of thick-walled cells which surrounds the whole stroma and very soon turns black. Slow internal development of this stroma continues during the winter; and by the first of May mature asci and ascospores may be found.

Ascospores were taken from these fruit bodies and placed in drops of water on the leaves of *Prunus avium* seedlings in the greenhouse. This was repeated several times and resulted in every case in abundant infection, followed in a few days by typical *Cylindrosporium* acervuli. Later pure cultures were obtained from the ascospores, and the inoculation tests were repeated, using pure cultures, with similar results.

The study of the life history, relationship, etc., of the fungus is being continued, the results of which will be published in the near future.

The fungus belongs clearly with the Phacidiaceæ and is apparently an undescribed species of *Coccomyces*. The fruit body is imbedded in the tissue of the leaf, extending usually from one epidermis to the other. At maturity the wall of the fruit body bursts irregularly on the under side of the leaf, exposing the grayish-white hymenium beneath. The asci are club-shaped with a constricted, short-pointed apex. The spores are elongate, one- to three-celled, and borne in a fascicle in the end of the ascus.

Arthur,[1] in 1887, described what is probably the same ascogenous form (or closely related species) on plum leaves which were affected with *Cylindrosporium* the previous year. A similar ascogenous fungus was also mentioned and figured on dead leaves of *Prunus* by Pammel[2] in 1892, but in neither case was the fungus named or its connection with the *Cylindrosporium* stage proved.

The question now arises as to what species name should be applied to the perfect stage. One might employ the combination *Coccomyces padi* were it not for the fact that we are confronted with certain difficulties in the use of that name. In the first place we are not certain that the European form on *Prunus padus* is identical with the American form, though there is little doubt that a similar, if not identical, ascigerous stage is present on the dead leaves of that species in Europe. Furthermore, several different names have been used for the prunicolous species of *Cylindrosporium* in North America and a similar difficulty would arise if a choice of one of these were attempted. In the second place, while a specific name already employed for an imperfect stage might be used for a new species there would always arise confusion as to what principle of nomenclature was followed in the combination if a name previously employed for an imperfect stage were used. According to the International code of nomenclature adopted at Brussels in 1910, relating to polymorphic fungi, a species name applied to the perfect stage has precedence over names applied to an imperfect stage. In order, therefore, to avoid any confusion, I propose for the perfect stage of the fungus on *Prunus avium* the name *Coccomyces hiemalis* n. sp. with the following brief diagnosis.

Coccomyces hiemalis n. sp.: *Ascomatibus sparsis* interdum subaggregatis, punctiformis, nigris, ovatis vel orbicularibus, primum claussis, deinde in lacinias plures acutas dehiscentibus; disco pallido carneo, 125–210 μ lat. ascis clavatis, crassiuscule stipitatis, 70–95 $\times$ 11–14 octosporis, apice papillato; paraphysibus filiformibus, simplicibus aut ramosis, apice curvato; sporidiis linearibus 33–45 $\times$ 2, 5–3, 5 μ, simplicibus aut 1–3 septatis.

Hab. In pagina inferiore deiectorum foliorum Pruni avii.

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[1] Arthur, J. C., "Plum Leaf Fungus," N. Y. Agr. Exp. Sta., Rept. 5, 293–298, 1886.

[2] Pammel, L. H., "Spot Disease of Cherries," Iowa Agr. Exp. Sta., Bull 13, 55–66, 1891.

On the History of Cottons and Cotton Weevils

Referring to my first article on the Peruvian square-weevil,[1] in which were presented data relating to the origin of the cotton plant, it now seems possible to make certain well-founded deductions. The presence of the nearest wild relatives of *Gossypium* only in the New World indicates that the stock from

[1] *Journal of Economic Entomology*, April, 1911.