peatedly by other workers to be associated with respiratory phenomena in cells (*cf.* Crozier[4] and[5]).

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THE ISOLATION OF CRYSTALLINE TOBACCO MOSAIC VIRUS PROTEIN FROM DISEASED TOMATO PLANTS

THE isolation of a crystalline protein possessing the properties of tobacco mosaic virus has recently been described.[1] This protein was obtained from Turkish tobacco plants infected with this virus, by fractionation of the globulin in the plant extract with ammonium sulphate, celite and lead subacetate. The same general procedure with certain improvements[2] has been applied to extracts from tomato plants infected with tobacco mosaic virus and an active crystalline protein has been obtained from this host plant.

The protein from mosaic-diseased tomato plants and that previously isolated from mosaic-diseased Turkish tobacco plants have the same crystalline form, optical activity and chemical composition. They likewise give the same protein color reactions and are precipitated from solution under the same conditions. When solutions of the protein from diseased tomato plants are made more alkaline than about pH 11 or more acid than about pH 1, the protein is denatured and the virus activity is lost. It is completely coagulated and the activity lost on heating to 94° C. These results are similar to those obtained with solutions of active crystalline protein from diseased tobacco plants. Cataphoresis experiments, carried out by means of the Northrop-Kunitz apparatus, on the crystals obtained from tobacco plants and on those obtained from tomato plants show that the isoelectric point of each is about pH 3.2. At hydrogen-ion concentrations more alkaline than pH 3.2 the crystals from both sources migrate to the positive electrode, whereas at more acid reactions they migrate to the negative electrode.

No significant difference between the infectivity of protein from tobacco plants and protein from tomato plants was detected in several tests in which the half leaf method of inoculation was used. One cubic centimeter of a solution containing but 10^{-9} grams of the crystalline protein from either source has usually proved infectious. The crystalline protein from mosaic-diseased tomato plants, when present in solution at a concentration of 10^{-5} or more grams per cubic centimeter, gives a precipitate when mixed with the sera of animals previously injected with either the crystalline protein obtained from diseased Turkish tobacco plants or with the juice from such plants.

The isolation from a different host plant of a protein possessing the same physical, chemical and biological properties as those previously found for the protein from mosaic-diseased tobacco plants offers additional evidence for the identity of the protein with the agent responsible for the tobacco mosaic disease.

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SCIENTIFIC APPARATUS AND LABORATORY METHODS

"KARO" AS A MOUNTING MEDIUM

IN recent years "Karo"[1] has been used as a mounting medium for zoological and botanical material by a number of investigators. It is a mixture of maltose, dextrose and dextrin.

The writer has found it useful for mounting algae. With delicate forms, it is necessary to concentrate the solution gradually, as in the glycerine jelly technique. Finally when the "Karo" is concentrated a hard mount is obtained which is as firm, and seems to be as permanent, as a balsam or damar mount. It is also useful in mounting pollen grains. The preparations are more permanent than those made with glycerine jelly, and the advantage of the glycerine jelly method is retained in that the grains, when so mounted, may be studied in their expanded condition. It is also a speedy, efficient medium for making whole mounts of insects. Clearing the animal, which is often a difficult process due to the presence of air in the tracheae, is not necessary. Animals which are mounted in "Karo" have a more natural appearance than those mounted in damar.

Ordinarily ringing the cover glass is not necessary. It is advisable only if the slides are exposed to very moist conditions or when thick whole mounts are made. The addition of a few crystals of Thymol or any preservative of this type prevents the growth of fungi, although fungi rarely develop, even when the preservative is lacking. "Karo" has the advantage over balsam or damar in that material may be mounted into it directly from water or the lower alcohols. Thus the hardening and shrinkage, which often occur with the use of alcohols and clearing agents, may be prevented. The sugars present do not crystallize. Slides which were made six years ago are still in perfect condition.

[4] W. J. Crozier, *Jour. Gen. Physiol.*, 9: 531, 1925–26.
[5] W. J. Crozier, *Jour. Gen. Physiol.*, 7: 189, 1924–25.
[1] W. M. Stanley, SCIENCE, 81: 644, 1935.
[2] W. M. Stanley, *Phytopath.*, 26, No. 2, (Abst.), 1936.

[1] "Karo" is a white corn syrup produced by the Corn Products Company.