gated. That the two forms of dried agar have different structure is clear. Whether the removal of strains plays a rôle in the mechanism of the imbibition and swelling of gels, as well as in their behavior in some other respects, is under investigation.

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On the gelatinization by heat of wheat and maize starch.

By C. L. ALSBERG and O. S. RASK.

[*From the Food Research Institute and the Department of Chemistry, Stanford University, Calif.*]

By means of the Stormer viscosimeter it was found that during the gelatinization process the viscosity of wheat and maize starch suspensions in water increases gradually over a range of 25 to 30 degrees. Gelatinization is not a sharp transition point like the melting points of crystalline substances. It resembles more nearly the gradual softening processes of glass and other non-crystalline substances that show no definite melting points. This conception is consistent with the disappearance of anisotropy in the early stages of gelatinization. There is good evidence for the belief that the anisotropy of the starch grain is the result of strain. Heating in the presence of water, it is probable, destroys the anisotropy because it removes the strains. The process is analogous to annealing.

Possibly the gelatinization of starch is to be regarded in this wise: The starch gel first imbibes water. In this process strains are presumably removed and in consequence anisotropy disappears. When the starch gel has thus reached a certain degree of dilution by imbibition, it melts. If this is the course of events, it is not necessary to assume, as has been done so frequently, that the gelatinization of starch depends upon depolymerization. The conception of gelatinization here presented is in accordance with certain observations that are not readily explainable on the assumption that starch during gelatinization depolymerizes—using this term in a strictly chemical sense. These observations are: that sharply drying starch or thoroughly wetting it changes the gelatinization temperature; that gelatinization is incomplete unless adequate quantities of water are present; and that the rate of heating has a marked effect upon the gelatinization temperature.