cation), who has been investigating cronstedtite independently of the present work.

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A Phase Change induced by Cold Work

A phase change has been produced in the ζ-phase of the alloy AgZn by cold work. The ζ-phase transforms to the β-phase on filing. The lattice parameter of the β-phase agrees with that found by Owen and Edmunds[1].

The structure of the ζ-phase has been determined by Edmunds and Qurashi[1] and confirmed by Bergman and Jaross[3]. The body-centred cubic β-phase and the ζ-phase hexagonal structure are closely related, the latter being obtained from the β-phase by displacement of the atoms mainly in the direction of one of the cube diagonals. Edmunds and Qurashi[2] have shown that both structures may be considered to have a unit cell containing nine atoms, and that in the ζ-phase the zinc atom at the origin has an abnormally high temperature vibration parallel to the hexagonal axis.

The rate of change is dependent on time and temperature, taking approximately four days for completion at room temperature. The β-phase reverts to ζ-phase on heating to approximately 130° C. Our present results suggest a nucleation and growth mechanism activated by stress.

A full account of this work will be published later.

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Relationship of the Strength of High Solids Pectin Gels to the Concentration and Jelly-forming Capacity of the Pectin Present

In 1940 Hinton[1] put forward a theory which was capable of explaining quantitatively many of the phenomena associated with the formation of high solids pectin gels. More recently, the assumptions on which Hinton based his theory have been criticized and an alternative explanation suggested which is more in keeping with current theories of the properties of macromolecules[2]. Neglecting the small variation in the degree of dissociation of pectin with concentration[1,3], for a given pectin in a gel of specified soluble solids content and *p*H, both theories indicate a linear relationship between gel strength and pectin concentration. However, a review of a number of the published curves relating the gel strength and the pectin concentration shows that when the strength is measured within the elastic limits of the gel and is expressed in units proportional to an elastic modulus, in each case the curve obtained is convex to the pectin concentration axis[4–11] (gel strengths measured by means of the ridgelimeter[9–11] may be converted from percentage sag to shear moduli by means of the curve given by Owens and Maclay[12]). Similar curves have been obtained by some workers measuring the breaking strengths of the gels[13–15], although in some instances a linear relationship was found[16,17].

Linear relationships between log (gel strength) and log (pectin concentration) have been demonstrated previously[4,5,13,14]. Some of the published curves from

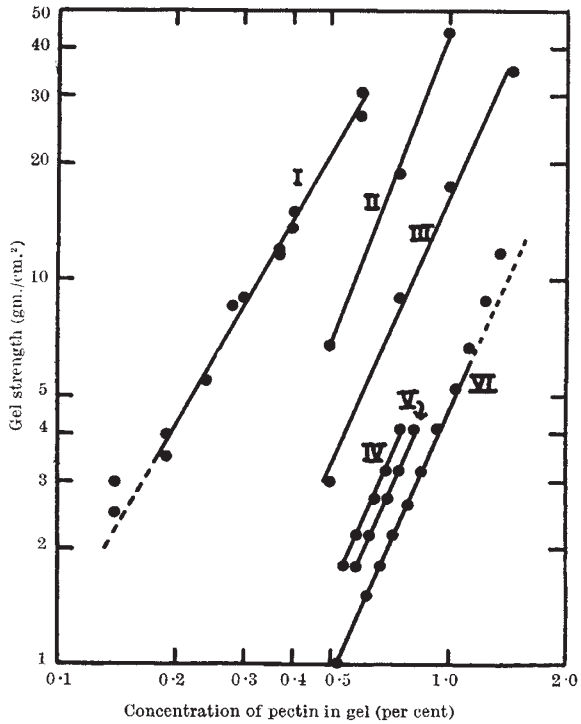

Fig. 1. Gel strength versus pectin concentration curves from various sources. Curve I from Hinton (ref. 6), II and III from Säverborn (ref. 8), IV from Joseph and Baier (ref. 9), V from Olliver *et al.* (ref. 11), VI from Lockwood (ref. 10). In curves IV, V and VI the pectin concentration has been expressed in terms of '100 grade' pectin as defined in the respective methods