(lacking as yet any quantitative modelling) that such a layer would have to have a thickness at least 10% that of the shelf to be detected. Sensitivity to a basal resistive layer, such as has now been observed at several locations on the ice shelf, is much greater.

W. F. BUDD: The temperature profile seems to show no growth of ice from ocean water on the bottom. Is that what you conclude from the profile and the d.c. conductivity?

BENTLEY: Yes. I believe that the balance at the ice–water interface is within ± 0.1 m year^{-1} of zero.

REFERENCE

Bentley, C. R. 1977. Electrical resistivity measurements on the Ross Ice Shelf. *Journal of Glaciology*, Vol. 18, No. 78, p. 15–35.

THE DISLOCATION FORMATION VOLUME IN ICE

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ABSTRACT. Relaxations around a shear dislocation loop on a basal plane in ice have been studied by molecular dynamics. The model intermolecular potential included directional components which stabilized the open ice structure. A random phase approximation was introduced to simulate the disordered arrangement of hydrogen bonds. The dislocation formation volume was found to be zero within the limits of computational error. This paper is published in full in *Nuclear Metallurgy*, Vol. 20, Pt. 1, 1976, p. 572–81.

DISCUSSION

J. W. GLEN: Your "dislocation loop" consists of a movement of only two molecules by $\frac{1}{2}b$ each in opposite directions. This is a very minimal dislocation—it is hardly a line defect and has no perfect crystal in the middle of the loop. Is it sufficiently like these larger dislocations for it to be safe to assume that volume changes are comparable? Is there any reason why your model, with cyclic boundary conditions, could not be used for a straight dislocation right across the cell?

O. B. PEDERSEN: I think our model could also be used for a straight dislocation. However, we have a special interest in this particular dislocation configuration, which could be called a "point dislocation" rather than a "dislocation loop". In molecular dynamics studies of crystals of the noble gases Cotterill and others (1974) observed that point dislocations were spontaneously generated at the onset of melting. We would like to know whether this is a general phenomenon and have therefore studied the point dislocation and not the line dislocation. It is certainly dangerous to make direct comparisons between the formation volume of a point dislocation and that of a line dislocation.

REFERENCE

Cotterill, R. M. J., *and others*. 1974. Molecular dynamics studies of melting. III. Spontaneous dislocation generation and the dynamics of melting, by R. M. J. Cotterill, W. D. Kristensen and E. J. Jensen. *Philosophical Magazine*, Eighth Ser., Vol. 30, No. 2, p. 245–63.