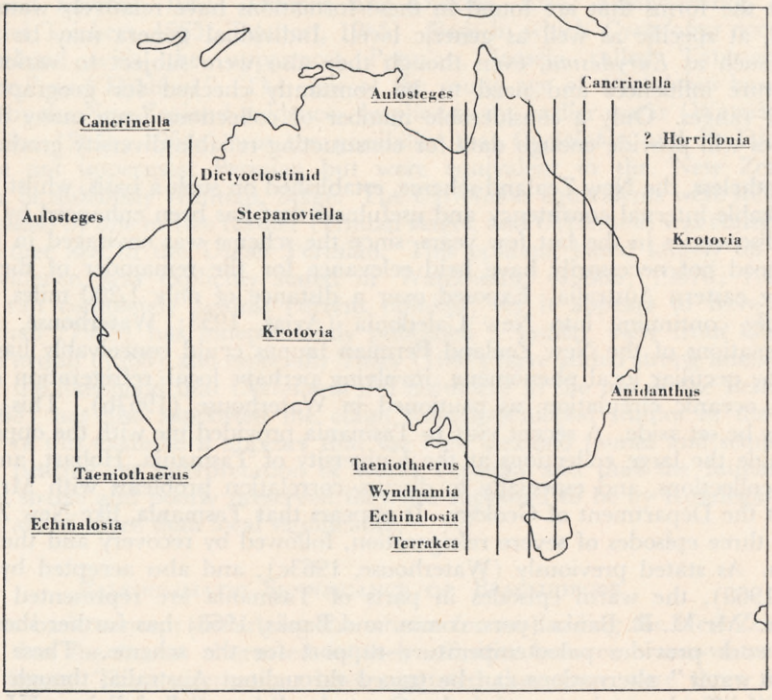

FIG. 2.—Distribution of Productida (Productacea and Strophalosiacea) in Australia during the late Sakmarian and early Artinskian (e.g., Callytharra Formation, etc., of Western Australia, and Fauna II of eastern Australia = Telfordian Stage in New Zealand), each genus represented by a line generalised to suggest latitudinal extent. Fewest genera occur in Tasmania, and the number increases northwards through New South Wales and Queensland. In Western Australia a Dictyoclostid is found, member of a family not known in eastern Australia, and *Wyndhamia, Terrakea,* and *Anidanthus* with others are apparently absent. *Strophalosia* has been inadvertently omitted from Western Australia.

nella for instance was widely tolerant, but was rare or absent in Tasmania and southern New South Wales, whereas *Terrakea* tolerated the cold of Tasmania better. *Horridonia* is found only in the north part of eastern Australia and in New Zealand, as well as the Arctic realm and Zechstein—but not in the very warm regions with sizeable compound-coral reefs. Thus individual genera, as well as generic diversities, reflect temperature control.

It is possible also to trace temperature changes through time. A fine example is offered in Western Australia, where the Lyons Group, with glacigene sediment, is overlain by the Callytharra Formation, with no glacigene sediment. The upper Lyons faunas have limited generic diversity, and many of the genera are characteristic of cold water—such as *Eurydesma.* The Callytharra faunas are far more diverse, enriched in genera known in Tethyan faunas but missing from the upper Lyons. Significantly *Eurydesma* is absent. An example is offered in New Zealand by the Braxtonian, Puruhauan, and Waiitian Stages. The Braxtonian Stage has only three productacean genera, *Krotovia, Cancrinella,* and *Terrakea*; the Puruhauan has *Waagenoconcha, Horridonia, ?Anidanthus, Cancrinella,* and *Terrakea,* signifying through its diversity a warmer-water fauna; the Waiitian has only *Sowerbina* and *Terrakea,* suggesting another cold- (or cool-) water fauna.

These data cannot, of course, be used uncritically. Allowances must be made for conditions of preservation, bottom facies, and other ecological conditions apart from temperature. The rapid deposition of the Greville Formation or the upper Takitimu Group of New Zealand obviously precluded rich faunas of any descrip-