Table 1. Percentage of old families and percentages of species belonging to old families in seven marine pelecypod faunas. Data from (*6*).

Region	Old families (%)	Species in old families (%)
Abyssal	30	43
Arctic	30	52
Antarctic	30	26
South Australia	19	21
West Africa	23	19
Caribbean	20	23
Northern Panamic	19	22

There are no species of deposit-feeding tellinaceans in the antarctic; all other marine pelecypod faunas have at least a few species of deposit-feeding tellinaceans (*5*).

In terms of the families and the amount of diversity within them, the arctic fauna includes more numerous cosmopolitan groups than does the antarctic fauna, for example, the abundance of the Mytilidae, Cardiidae, Tellinidae, and the presence of the Veneridae in the arctic. The diversity of the Philobryidae and Cyamiidae in the antarctic gives that pelecypod fauna a much more provincial aspect (*6*). To further emphasize the biological differences between the two polar pelecypod faunas, no species, only 28 percent of the genera, and only 43 percent of the families occur in both polar regions (*6*).

The antarctic pelecypod fauna is dominated by three families—the Limopsidae, Philobryidae, and Cyamiidae. These three have more than one-third of the species of antarctic pelecypods, and none of these families is found living in arctic waters. The Limopsidae are also absent from many shallow-water tropical faunas and could hardly be considered a cosmopolitan family. The Limopsidae are found in strata as old as Jurassic but could not be considered a truly old family of pelecypods. The Philobryidae, which are so common in cold and temperate waters of the Southern Hemisphere, are represented by only one species in the Northern Hemisphere, *Philobrya setosa* (Carpenter), which is found from Lower California to the Gulf of Alaska. Therefore, this family is not cosmopolitan, and it is not known in the fossil record before the Tertiary. The Cyamiidae are a family with most of their species found in the cold and temperate water of the Southern Hemisphere. Like the Philobryidae, this family is unknown before the Tertiary and would certainly be considered a young noncosmopolitan family.

Apparently Stehli *et al.* counted only the families in the various faunas and paid no attention to the number of species in each family. This can result in an inaccurate picture of the total pelecypod fauna of a region. For example, should one give as much weight to the presence of one rare species of astartid in a fauna as to 12 species of philobryids? The astartids and mytilids, both ancient stocks, are represented by only one species each in antarctic waters.

In Table 1 I show how differences can arise when data are used in different ways. Only the abyssal, arctic, and antarctic are cold-water faunas. I have included the following families in the Paleozoic or old category: Nuculidae, Nuculanidae, Solemyidae, Arcidae, Pectinidae, Mytilidae, Pteriidae, Trigoniidae, Pinnidae, Limidae, and Astartidae. Perhaps some others should be included, such as the Isognomonidae, Ostreidae, Carditidae, and Crassatellidae, but at least some of these families may be doubtfully Paleozoic; and only the Carditidae, with two species in each polar region, are found in cold water. I believe, therefore, that I am showing no bias.

There are higher percentages of old families in the cold-water faunas (Table 1). However, when species belonging to the old families were counted, the results are considerably different. The antarctic has only a slightly higher percentage of species belonging to primitive families than do the warm-water faunas. The arctic fauna, on the other hand, has an astoundingly high percentage of species belonging to old families, being twice as high as the antarctic. I noted this marked primitive aspect of the arctic pelecypod fauna in 1955 (*7*). This great difference in percentage of species belonging to old families exemplifies another basic difference between the two polar faunas.

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Intermodal Equivalence of Stimuli in Apes

Davenport and Rogers (*1*) incorrectly cite a report of mine (*2*) as suggesting that "symbolic language may be essential in the mediation of certain cross-modal phenomena." In both that cited report and in others I not only gave detailed arguments against this view, but also argued strongly for an explicitly opposed thesis. I stated that *"it cannot be argued that the ability to form cross-modal associations depends on already having speech,* rather we must say that the *ability to acquire speech has as a prerequisite the ability to form cross-modal associations.* An important area of research which remains to be studied extensively is that of the course of acquisition of cross-modal learning in childhood before speech is fully developed" (italicized as in original report) (*2*, p. 275).

My argument was therefore that the ability to form cross-modal linkages was a necessary (although not a sufficient) condition for the acquisition of language. In view of the recent studies of the Gardners and Premack (*3*), which appear to show that chimpanzees do have some linguistic abilities, the finding of Davenport and Rogers that these animals can carry out certain cross-modal tasks is in conformity with my views.

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References and Notes

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