in the opposite direction of course, may be expected to follow transfer to a higher temperature. Thus, any metabolic study must consider the thermal history of the animals if the study is to be ecologically meaningful. Fry (1957) has reviewed metabolism and some aspects of thermal acclimation in fishes.

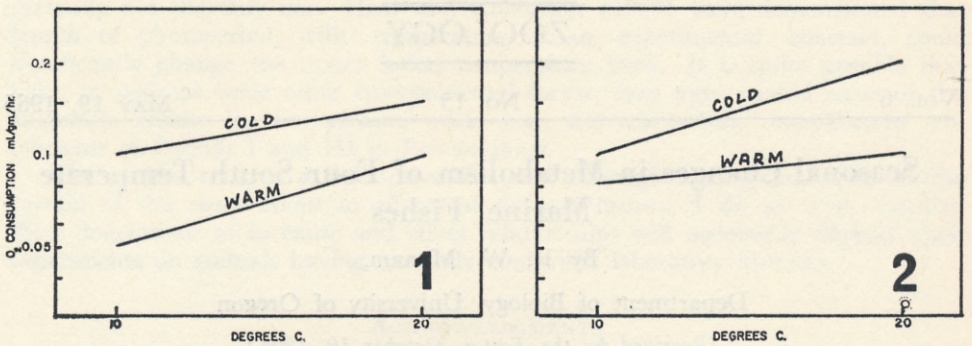

Fig. 1.—Differences generally observed between rate-temperature curves of cold- and warm-acclimated poikilotherms. See text.

Fig. 2.—Differences between rate-temperature curves of cold- and warm-acclimated specimens of certain species such as *Carassius vulgaris*. See text.

Bullock (1955) used the expression "acute" measurement of Q_{10} to indicate that a Q_{10} value had been derived from data on activity measured not only at the temperature to which the animal had been acclimated but also at other temperatures within the physiological range. He reviewed a large body of data which showed that the acutely measured Q_{10} of poikilotherms is significantly lower following a period of cold history than if such measurements are made after a period of warm history. We can illustrate a hypothetical example in Fig. 1. Here, metabolic rate, expressed as ml. O_2 consumed per gram of body weight per hour, is plotted against temperature ("rate-temperature" plot) for two groups of animals. One group, labelled "cold", was acclimated to 10° C. and the other group, labelled "warm", was acclimated to 20° C. The oxygen consumption of the cold-acclimated animals was the same (0.10 ml. O_2/gm./hr. when measured at the 10° C. acclimation temperature as that of the warm-acclimated animals when the latter were measured at their 20° C. acclimation temperature. Hence, the long-term Q_{10} would be 1.0, showing perfect metabolic compensation in this hypothetical case. The processes of acclimating to high temperatures tend to lower the metabolic rate at those high temperatures and, conversely, acclimation to cold tends to increase the metabolic rate at low temperatures. Thus, within limits, thermal acclimation helps the animal to maintain the rate of the system at a more uniform level than would otherwise be possible. The physiological mechanisms underlying acclimation are not understood. Although I have not seen such a degree of acclimation ability as appears in this hypothetical example, I do have a considerable body of data from laboratory studies of *Aequidens portalegrensis* which demonstrates that this species can make an almost perfect metabolic adjustment over the temperature range from 24 to 30° C. The long-term Q_{10} approximates 1.0 over this range. *A. portalegrensis* is a tropical fish, native to Brazil. It belongs to the family Cichlidae. There are no published accounts of the ecology of this species.