(species or races). After a very thorough analysis of these taxonomic features plus some others newly introduced, he plots twelve of them in a table of "population formulas" listed geographically. These show clearly that, over broad ranges, there is essentially no consistent maintenance of groupings of characters from one broad region to the next. One can detect gradual clines, step clines, and sudden mid-distribution cline reversals for each character, and the clines obviously do not all have their axes lying along the same compass directions.

One very dramatic character is that concerning the presence or absence of the oviducts in the male. Moore's map (Figure 3) shows oviductless males exclusively inhabiting the Mississippi Basin and the states to the east, from Long Island to northern Florida, while the populations situated peripherally, in the Florida Peninsula, New England, the northern and far western states, and southern Texas have, with scattered exceptions, males with oviducts. It seems reasonable to conclude that the oviductless condition dominates and is spreading outward from some center of origin, gradually displacing the oviduct-present character. The point here is that the distributional pattern of the character shows an obvious lack of correlation with those of the external "taxonomic" features. Is it to be ignored by taxonomists on this account?

Moore later (1946) detailed his findings after conducting interbreeding experiments between frogs from different populations, and found that impairment of embryonic development reached lethal proportions in crosses between parents from the northern and southern extremes of the area sampled, while those populations separated by smaller distances showed intermediate or no hybrid impairment. North-south differences were emphasized in these experiments, but some limited east-west tests gave similar results.

A further extension of his studies led Moore (1949) to consider variation of characters presumably having a much greater adaptive significance than those external ones earlier studied. The new characters included embryonic temperature tolerances and rates of development, which show a north-south difference of a more or less clinal nature; egg size, showing clinal reduction from north to south, but with a striking reversal in Mexico; and form of egg mass, concerning which data were insufficient and show only that variation may possibly run from east to west as well as from north to south. Combining Moore's studies, it is interesting to note that the most promising of the few possible "correlated breaks" in some of the external adult characters comes to the north of New Jersey in the East, whereas by the criteria of egg size and embryonic temperature tolerance, both demonstrated to be adaptively crucial characteristics, the New Jersey populations are not significantly different from the northern populations and belong with the latter instead of with the southern populations.

Moore quite logically rejects the validity of the former broad racial divisions, and points instead to the more uniform concatenation of characters that may be found within each of the many small, allopatric local populations. We agree that his findings accord with his judgement that "there is no generally accepted and easily applied criterion for recognizing subspecies."

LeGare and Hovanitz (1951), in a detailed study of genetically based adult color variation in Californian populations of the butterfly *Melitaea chalcedona* present data suggesting a racial split between the populations of the Little San Bernardino-Mojave Desert mountain area from those to the north and west. However, larval color varies as much as adult color and shows a different geographical deployment. The larvae from several northern populations are yellow, those from the southwest coast are largely deep black, while those from the desert area show replacement of the black by gray. Despite several confused and contradictory statements on the part of LeGare and Hovanitz