results emphasize the critical importance of the temporal factor in contour perception. In order to maintain the contour of the moving stimulus, each increase in V of 1°/sec requires a corresponding increase in T of from 20 to 30 msec.

The criterion of judgment required of the subjects eliminates apparent movement as the explanation of the data reported here. The stimulus during movement was always tilted slightly to the right (see Fig. 1), because of the nature of the apparatus. As long as this feature of the stimulus was reported, it was taken to indicate that real movement was being discriminated. It is believed, however, that the visual mechanism underlying apparent movement is involved to some extent in these observations, as it probably is in *all* forms of movement perception.

Further experiments dealing with the effects of numerous stimulus variables in relation to contour perception of moving stimuli are in progress.

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Notes on the Ecology of West Indian Species of Malpighia

Interest in the West Indian or Barbados cherry (*Malpighia glabra* or *M. punicifolia*) becomes greater every year as the commercial use of this fruit increases. The discovery in 1946 of its unusually high vitamin-C content has led to the addition of its juice to other baby-food juices to fortify their vitamin content. Recent reports have shown that the fruit supplies thiamine, riboflavin, niacin, and vitamin A, besides calcium, iron, and some phosphorus. As a result, propagation and cultivation of the plant has reached unprecedented proportions in Puerto Rico. However, the incidence of nematodes in the soils of the northern coasts of Puerto Rico where cherry culture is well established has produced serious problems. Studies have been made of other species of the genus to determine their resistance to root knot and their compatibility as stock material on which to graft susceptible species.

Ledin stated that the West Indian cherry has been in Florida for more than 50 years, where it is called *M. glabra* (*1*). He further believes that it is the same plant that is called *M. punicifolia* in Puerto Rico or that the two may be different forms of the same species. Woodbury accepted two different cultivated species but is now willing to concede that there is confusion in the taxonomy of the group (*2*). The possibility that the cultivated material is of hybrid origin has also been suggested. Asenjo (*2*) finds no appreciable differences in the vitamin content of the taxa studied.

The taxonomy of the Caribbean species is highly confused. Studies now in progress by W. T. Stearn of the British Museum (Natural History) and N. Y. Sandwith of Kew, England, include the investigation of type and other classical specimens, most of which are in European herbaria. Pending the outcome of these basic studies, opinions of local botanists on the correct identity and names of these taxa seem to be purely conjectural.

Some species are more resistant to nematodes than others. Studies of graft compatibility between these species and cultivated material are in progress. Differences in stem size among plants of comparable age indicate that some species are unsuited as rootstock material. In this group are *M. linearis* and *M. coccigera*. In other instances, the abundance of deciduous stinging hairs reduces the desirability of otherwise potential understock species. This is especially true of *M. infestissima*, *M. shaferi*, and *M. fucata*.

Malpighia is a genus of some 30 species of shrubs and small trees of tropical and subtropical America, all of which are found in the native state in the West Indies. Cuba has some 20 wild species, six of which are endemic (*3*); Hispaniola has 15, which have been reported by Moscoso (*4*), but only five are endemic; Jamaica has eight with one endemic, as inferred from Fawcett and Rendle (*5*); and, in Puerto Rico, there are only six, two of which, and possibly a new one, are endemic. The distribution of these wild species is rather limited to the Greater Antilles. *Malpighia coccigera* extends as far south as Martinique and St. Lucia; *M. urens* reaches St. Vincent and Bequia of the Grenadines; and *M. linearis* reaches to Guadeloupe. Greater concentration seems to be northward and westward, especially on the larger bodies of land.

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Statistical Estimation of the Size of a Small Population

The technique of estimation discussed in this report is restricted to the following methodological approach. A sample of one is drawn at random, tallied, marked for future identification, and replaced. As trials progress, individuals that had been marked are drawn with increasing frequency. These, of course, are replaced without being tallied, and eventually the process is terminated on the assumption that the population has been exhausted. Estimate of the size of the population thus depends on the criterion selected by the observer.

The criterion proposed here provides not only an estimate but also a statement of confidence regarding the estimate. The rational basis for this criterion and the computation procedure that it demands are illustrated in the following two examples. In the interest of clarity, the result of each drawing is shown graphically with a check in the appropriate square on cross-section paper. Consecutive drawings are numbered on the abscissa, and occurrences of unmarked individuals on the ordinate. Since the first drawing invariably yields an unmarked individual, the first result is always recorded as a check in the square adjoining the origin.

Figure 1*A* illustrates a hypothetical case in which every drawing yields the same individual. At the end of r_1 drawings the observer may terminate the sequence with a statement that the population consists of a single member. In making this decision, the observer rejects the alternative hypothesis of a population consisting of two members with only one of these appearing in every sample. The probability of this alternative, $p = (\frac{1}{2})^{r_1-1}$, may be equated to any desired decimal, and the value of r_1 may be computed. This value represents the minimal number of times that the same individual must be drawn if the probability of type-II error is to be no greater than the selected decimal (*1*).

In the present illustration the probability of rejecting the alternative hypothesis when true has been set at 10 percent. The equality, $(\frac{1}{2})^{r_1-1} = 0.10$, yields 4.3 as the value of r_1. Since the nearest larger integral value is 5, the conclusion is that there must be at least five consecutive drawings of the same individual be-