Twin research has not become obsolete as its critics of twenty years ago perhaps expected it would. Old, familiar research designs are finding new applications, and new research designs are appearing. Of greatest interest are the epidemiological studies that depend on the assembly or the aging of large numbers of twins in twin registries. As an outgrowth partly of the twin registries, partly of conceptual and mathematical progress, new methods have emerged for diagnosis of twin types and for analysis of twin data. One line of development started with the questionnaire method of zygosity diagnosis and has given rise most recently to zygosity diagnosis by principal component analysis. Another line started with probability calculations and has led to the use of generalized distance and non-central chi-square. The appropriateness of these methods in different contexts needs to be critically reviewed.

Among numerous research attacks on the phenomenon of twinning, some have potential impact on the "experimental" uses of twins. A good example is the analysis of the peculiarities of the environment of twins, which is of course very important in psychological twin research.

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An hypothesis is examined which considers the assumption of twin methodology that only two modes of twinning exist. The null hypothesis that DZ twinning and concordance for Down's syndrome are independent events is tested after removal of effects such as covariance due to maternal age. The null hypothesis is rejected ($P < 0.000002$). Possible explanations of the result considered are (a) that some of the cases are MZ