the onset of glaciation and "abortive glaciations" would not feature at all in the proposed studies.

As recorded, the Holocene period is of highest priority in terms of extreme conditions and the frequency characteristics of climatic fluctuations. In the present formative state of paleoclimatic research, it would seem prudent not to put all our eggs into one (isotopic) basket, but to take this opportunity to involve the entire range of paleoclimatic expertise in a program of mutual data testing and evaluation. Would not an International Decade of Climatology be a preferable research framework?

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Statistics and Rare Phenomena

Walzer and Gerald (Reports, 19 Dec. 1975, p. 1228) correctly report (*1*) that, in a study in which they obtained karyotypes of about 10,000 newborn males, the difference between the children of upper-class fathers and those of lower-class fathers in frequency of occurrence of the XYY (and also the XXY) karyotype was not statistically significant (*2*). The authors interpreted their results as showing "no significant effect of social class upon the frequency of XYY, and of XXY, among newborn males." An Associated Press report of the study stated flatly that XYY "occurs as frequently in the higher socioeconomic classes as in the lower stratums" (*3*).

The frequencies are not stated in Walzer and Gerald's report but can be calculated from the data in their table 2. For XYY they are .00195 and .00107 in the lower-class and upper-class groups respectively (*4*). This is a difference of 81 percent and would be noteworthy if it were found repeatedly; but because of the rarity of the karyotype it would not reach statistical significance except in much larger samples.

With their sample sizes and overall frequency of the karyotype, the frequency in the lower-class sample would have to be more than 3½ times that in the upper-class sample (*5*) to show statistical significance. For the difference between the observed frequencies to be statistically significant at the .05 level, the sample size would have to be increased fourfold (*6*). In short, the usual statistician's caveat against interpreting lack of statistical significance as counterevidence must be observed with special scrupulousness when dealing with rare phenomena such as XYY.

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References and Notes

1. The statistical test used in the study was not mentioned; presumably it was a chi-square, maximum likelihood, z-, or similar test.
2. Following a common practice, the authors use the term "significant," not "statistically significant."
3. "Chromosome abnormality hits all classes," Ann Arbor *News*, 17 December 1975, p. 15.
4. These frequencies were calculated from Walzer and Gerald's table with the procedures described in their text: non-Caucasians were excluded from the analysis, maternal age was disregarded, and classes IV and V were pooled as lower-class and I, II, and III as upper-class. The corresponding frequencies of the XXY karyotype are .00117 in the lower-class sample and .00092 in the upper-class sample, a 27 percent difference.
5. A chi-square value of 5.365, for which $P = .021$, is given by frequencies of .00273 and .00077 for lower-class and upper-class infants respectively. These correspond to 5 XYY's among 6512 infants for the upper-class sample and 7 in 2564 for the lower-class sample, a 3.56-fold difference.
4. A fourfold increase of Walzer and Gerald's sample corresponds to 20 XYY's in 10,256 cases for the lower-class group and 28 in 26,048 for the upper-class group. These results give a chi-square statistic of 3.63, for which $P = .057$, and a maximum-likelihood (G) statistic of 3.96, for which $P = .047$.

The analysis described by Boucher was likewise performed by us during the initial examination of our data. If the frequency of individuals with the XYY karyotype in social classes IV and V is indeed as great as .00195, it would still be insufficient to account for the 10- to 20-fold excess of XYY individuals in certain institutional populations. This was the basis for our concluding that whatever effect social and economic factors might have on the institutionalization of XYY individuals, the effect was not *primarily* due to any influence on nondisjunction.

It is still reasonable to believe that the frequency of the XYY karyotype in newborns is not affected by the social class of their fathers. It should be noted that, while an excess of XYY individuals was present in social classes IV and V in the Boston study, a *deficiency* in these two classes occurred in the Edinburgh study (*1*).

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