LETTERS

XYY Chromosome: Premature Conclusions

McWhirter's letter (6 June) gives the reader the erroneous impression that more is known about the association between the XYY karyotype and criminality than is actually the case. Our own review of the pertinent literature (currently in press in the *Journal of Psychiatric Research*) has led us to believe that no strong correlation exists between the presence of an extra Y chromosome and any specific behavioral, morphological, or physiological parameter. A tendency toward increased height may be an exception, but this too requires further study.

That XYY males are uncontrollably aggressive psychopaths appears to be nothing more than a myth promoted by the mass media. When compared to matched chromosomally normal fellow inmates, institutionalized XYY males seem to be less violent or aggressive and their preadmission histories generally involve crimes against property rather than persons. Several XYY individuals without behavioral dysfunction or criminal tendencies have already been identified.

The research on XYY individuals to date has not ruled out familial, social, and other nongenetic factors as the major determinants of the characteristics attributed to the extra Y chromosome. No direct comparisons of the actual home environments of XY and XYY males have been made. Also, there is no evidence whatsoever to indicate that XY and XYY males tend to differentially benefit from different rehabilitation procedures. Prospective studies of XYY individuals detected at birth may clarify some of the relevant factors that contribute to behavioral deviancies in some XYY individuals. However, the necessity of eliminating bias by investigators and of using adequately matched controls and double-blind procedures cannot be sufficiently emphasized. The legal and medical implications of findings in this area increase the usual responsibility of the investigator to be circumspect and cautious in drawing conclusions.

SEYMOUR KESSLER
RUDOLF H. MOOS
Department of Psychiatry, Stanford University Medical Center, Stanford, California 94305

Defoliants: Orange, White, and Blue

Galston points out (Letters, 25 Apr.) in his comments on the military uses of defoliants in Vietnam that the Department of Defense, according to Tschirley, is using picloram because there is not enough 2,4-D type herbicide produced in the United States to satisfy military requirements in Vietnam.

We recently returned from a short visit there and were told by chemical operations officers in Saigon that the reasons for the increased use of picloram are due to certain characteristics of agent Orange (2,4-D and 2,4,5-T) and agent White (picloram and 2,4-D). Drifting of the highly volatile agent Orange from target areas into the environs of Saigon poses a threat to crops and fruits in friendly areas. During trips around Saigon we saw much evidence of defoliation probably caused by this drifting. According to these officers, in the III Corps area, White is now being used almost exclusively because it is much less volatile than Orange and thus does not drift. In regions where there is little agriculture, however, Orange is preferred because it is more economical.

They also stated that in Vietnam now Orange constitutes about 50 percent of the total herbicides used, White 35 percent, and Blue (cacodylic acid) 15 percent. For whatever reasons, it is certain that use of White for defoliation in Vietnam is increasing despite the threat to Vietnamese agriculture by its persistence in the soil.

G. H. ORIANS
Department of Zoology, University of Washington, Seattle 98105
E. W. PFEIFFER
Department of Zoology, University of Montana, Missoula 59801

Recent letters by biologists indicate overriding concern for the effects of defoliation in Vietnam on plants and animals there. Strangely, these letters pay little or no attention to the purpose of defoliating these jungle areas: namely, to save American and South Vietnamese lives. The concern is almost exclusively for plants and animals. No wonder that the opinions of most academic and scientific people regarding national and international matters command little respect. These opinions are too narrowly based on highly specialized interests; that is, the fate of a

particular animal species. Highly specialized as most of us are, we are not likely to see the whole picture and yet we take such outraged stands—as many doubtless will to this letter.

CLARENCE LEUBA
Department of Psychology,
Antioch College,
Yellow Springs, Ohio 45387

Evolution or Not

King and Jukes ("Non-Darwinian evolution," 16 May, p. 788) state that one thing the editor (natural selection) does *not* do is to remove changes which it is unable to perceive. If these changes cannot be perceived at the organismal level, are we dealing with evolution at all?

Evolution implies directed change. There is not and never has been, in neo-Darwinian thought, any quibble about the fact that change must come from random mutation at the molecular level. King and Jukes, in our opinion, are not discussing evolution at all as we define it, but the perpetuation of neutral mutations through random drift. Even here they admit that selection has played a part by eliminating lethal mutations. We do not regard perpetuation of neutral mutations as being evolution per se, but merely the pool from which evolution can occur, given a directed push by natural selection.

JOHN E. GUILDAY
MARY R. DAWSON
Section of Vertebrate Fossils,
Carnegie Museum,
Pittsburgh, Pennsylvania 15213

It is perfectly true that the molecular changes that we discussed are not evolution in the usual Darwinian sense, which is precisely why we used the term "non-Darwinian evolution." However, we see no advantage in considering nonadaptive characteristics as being outside the province of evolution, particularly since it is usually quite impossible to determine whether a given molecular change has been due to drift or selection. We believe that all heritable genetic changes which become stable species characteristics are included, or should be included, in the concept of evolution.

JACK LESTER KING
Space Sciences Laboratory,
University of California,
Berkeley 94720