Letters

XYY Chromosome and Criminal Acts

It is not surprising that lack of communication between geneticists and lawyers is leading to difficulties in the case of XYY males (see Minckler's letter, 14 Mar.). Several medico-legal journals have barely touched the subject, although the basic facts were uncovered by Patricia Jacobs and her colleagues in Scotland 3 years ago. As a barrister at the English Bar and a practising geneticist, I note the following points.

1) Genetic determinism (or, as it was once described, scientific Calvinism) contributes more to human behavior than most sociologists, penologists, and lawyers like to admit.

2) The second Y chromosome increases the probability of recidivist criminality, but only a portion of XYY males develop criminal behavior. Once a deviation occurs it becomes highly probable that it will continue; first occurrences are often shortly after puberty.

3) Fathers and children of XYY males are no more likely to be chromosomally abnormal than the rest of the population. The condition is innate but not inherited or inheritable. Characteristically, the home environments of criminal XYY boys are flawless and their behavior is "mystifying."

4) It should be recognized in law that no person should be subject to penal process merely because he is chromosomally abnormal. An overt criminal act is required.

5) All boys and men who are under lawful restraint should be classified into XY and XYY categories, so that the best treatment can be ascertained and carried out.

6) XY delinquents (whose families quite often provide a criminal environment) are expected to be much more amenable to environmental treatment. Their future is gravely prejudiced if they are incarcerated with genetically determined XYY's who appear to be resistant to these treatments.

7) Failure to segregate XYY delinquents also prejudices their future, since it is notoriously difficult to research appropriate medical (here, perhaps, chemotherapeutic) measures unless the subjects are all suffering from the same syndrome.

8) Ideally the duty of the state, as soon as XYY is diagnosed (after the onset of overt criminal symptoms) is to protect the public, to recompense victims, to protect other inmates, and to seek to restore normal function in, and then liberty to, the XYY subject. Not all common law jurisdictions adopt this ideal order of priorities, but it will be apparent that in some of them new fields of litigation are opened up and it is important that professional people should be mindful of them.

Thus, where actions in tort lie against the state or its agents or both, each chromosomal type of delinquent, if not segregated, might sue—the XY for the gross negligence, and perhaps assault, of the state which is confining him in an environment known to be prejudicial to his chances of reform—and the XYY, because he is being negligently and cruelly deprived of the treatment and research which his condition requires. Subsequent victims of an XYY whom the state had negligently failed to diagnose despite confinement after a criminal act should also have an action in some jurisdictions. The probability factor makes the criminal XYY a predictably dangerous person and the standards of the duty to take care should accordingly be raised. Failure to segregate chromosome-types might in some jurisdictions be referable to the Ombudsman.

Psychiatrists who fail to obtain a cytologist's report on a patient who might reasonably be in the XYY category (exceptional height is one of the usual additional symptoms), and who then give advice which damages the patient, would seem to be in the position of any other negligent medical practitioner.

9) It is not improbable that genes (at present "invisible") conferring a raised probability of criminal behavior will be discovered as geneticists increasingly refine population statistics and electrophoretic or other methods of analysis. The same principles would apply as in the case of XYY.

10) There is a need to re-sort penological ideas and priorities. Genetic "determinism" is always probabilistic. As I see it, the objects of penal action should now be: (i) to forestall injury and damage to the public, but not to follow the Wootton theory of "preventive social hygiene" or to permit the anticipation or provocation of a criminal act, since these involve violations of personal liberties (thus in the case of the XYY, "every dog may have his bite"); (ii) to prevent repetition; (iii) to make it possible for the subject to recompense his victim; (iv) to restore normal responses in the subject; and (v) to deter persons, in whom environmental influences are strong enough, from commission of criminal acts.

Is there a moral level with which to justify retribution? The judiciary has often become hopelessly illogical on retribution and some judges have come near to invoking for the nonce "vox populi—vox Dei." But with our present knowledge, we should understand that retribution is not a permissible activity of the human world; it should be left to a merciful God.

KENNEDY MCWHIRTER
Department of Genetics,
University of Alberta,
Edmonton 7, Canada

Graduate School Guessing Game

Schagrin's letter (18 Apr.) is intended to expose the weaknesses of the cumulative grade point average (GPA) earned in college as a predictor of performance in graduate school. But as he makes his points, Schagrin appears to be finding fault with the *criterion*—graduate grades—not with the predictor at all. To paraphrase:

1) The range of graduate grades is restricted, mostly to A's and B's, with only an occasional C.

2) The major concern of graduate schools is attrition, or dropout, not grades.

3) The grade criterion in graduate should not be the object of our concern; rather we should be concerned with selecting those individuals who will make significant contributions to their field.

These points do indeed represent problems to consider in the prediction of graduate school performance, but clearly they are problems that exist whether we use the college GPA as a predictor, or standardized tests (which, it should be obvious from my affiliation, would earn my endorsement), or any other predictor. It does appear that Schagrin is aiming at the wrong target.

So much for misdirected criticism. But what distresses me most about Schagrin's letter is his willingness "to use the number of hairs on a student's head divided by his weight. . . if that were to be an effective predictor." The prediction of academic performance involves moral and ethical responsibilities as well as statistical precision, and to adopt a blindly empirical approach to prediction, as Schagrin suggests, without regard for its social consequences is to turn our backs on these responsibilities. Let's come right down to it: If skin color is a good predictor of academic performance—and the purely empirical results observed by many investigators indicate that it is—should it therefore be used to select graduate school students?

WILLIAM H. ANGOFF
Educational Testing Service,
Princeton, New Jersey 08540

Gaps in the Graduate Training of Students from Abroad

I should like to add to the sensible letter by R. R. Ronkin (3 Jan.) regarding the problems of foreign Ph.D. students in the United States and their subsequent work in their home countries. As an American teaching abroad, I have had some experience placing students from the University of Malaya in universities in the United States, Canada, Britain, and Australia. The three specific areas of supplementary training suggested by Ronkin are certainly well taken: identification of research problems, maintenance skills, and basic administrative techniques.

Also, I have found that a student is occasionally awarded a fellowship to work in an advanced country which stipulates study in an area different from that desired by the student and by his own institution and homeland. Recently two students in our school of biological sciences were awarded scholarships, one to a university in country A, and the other to a university in country B. The awards should have been reversed. Country A required study in a field in which the first student was unfamiliar, and country B made the award for study which was unsuited to its grantee but would have furthered the work of the first student. These awards were both generous and difficult to secure. For those reasons, each student reluctantly agreed to accept them, even though the studies were different from their original work, and different in fact from that desired by their home institution.

Such anomalies are probably accidental, but they reflect other oversights made by the awarding committees of universities in advanced countries. Why, for example, do they insist that these students pursue highly applied training programs, even including those superior students who show promise of becoming skilled and independent research scientists? Developing countries need technicians and technologists, but also they need a superstratum of scientists who can work in pure science.

To cite one example, it is virtually impossible to find broadly-trained ecologists who can cope with all the aspects of land-use, as well as agriculture, in developing countries. There are great gaps between our knowledge of forestry, forest ecology, and forest resource management in the North American or European regions and its application to tropical rain forests. A newly-trained forester cannot uncritically apply in his tropical homeland, for example, the "monoculture" system which may work well in temperate areas, but is not necessarily suitable for the tropics. We need here more broadly trained and creative scientists who will begin original research instead of assuming that his knowledge of the management of pure stands of conifers, for instance, is all that is needed in order to utilize and preserve the dipterocarp forest, which is rich in species, but with an ecology largely undetermined.

Money is not the only requirement of the smaller and poor countries; their students must be trained to fill these very special technical and scientific basic needs.

BENJAMIN C. STONE
School of Biological Sciences,
University of Malaya,
Pantai Valley, Kuala Lumpur, Malaysia