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LETTERS

XXY Genotype

Barbara J. Culliton, in an article about the suspension of XYY screening at the Boston Hospital for Women (News and Comment, 27 June, p. 1284), reports that the original XYY study was "premature" and that today "all responsible scientists insist that the XYY chromosome is quite innocent of causing any crime."

Let me attempt to set the record straight. The first survey that demonstrated an excess of men with an additional Y chromosome in an institutionalized population was conducted by myself and my colleagues (1) among a group of mentally subnormal male patients in a state hospital, an institution for patients "who require treatment in conditions of special security on account of their dangerous, violent or criminal propensities." We reported our observations on 197 such patients, 266 randomly selected newborn males, 209 randomly selected adult males, and an additional 1500 males whose chromosomes we had examined. We found seven males with an XYY chromosome constitution in the patient population, none in the 475 randomly selected males, and only one in the remaining 1500 males ($\chi^2 = 13.8$, $P = .0002$). Our conclusion, "the finding that 3.5% of the population we studied were XYY males must represent a marked increase in frequency by comparison with the frequency of such males at birth," could hardly be considered premature by even the most conservative standards.

Further studies, both of men in mental and penal settings and of control populations were undertaken. The results of these investigations were excellently and exhaustively reviewed by Hook (2). Consideration of the facts show (i) that the original observations have been amply confirmed; (ii) that the excess of males with an abnormal chromosome constitution in mental-penal settings is not confined to XYY individuals but also applies to XXY men and, most dramatically of all, to men with an XYY chromosome constitution, who are found 100 times more frequently in mental-penal settings than among the newborn; and (iii) that, while the excess of men with an abnormal sex chromosome constitution is most marked in mental-penal groups, it is also evident among men in exclusively penal and exclusively mental settings.

We know nothing as yet about the mechanism of action of the additional sex chromosomes nor their effects, if any, on the intelligence and behavior of the majority of affected individuals in the population

at large. It seems reasonable to suppose that human behavior, like virtually all other human traits, is determined both by genes and environment and that the possession of an abnormal chromosome constitution may make its carrier particularly susceptible to the effects of an adverse environment.

Those who consider "the attempt to determine a genetic basis for antisocial behavior a diversion with harmful effects" have succeeded in suppressing a research project which was deemed by peer review to meet the rigorous ethical and scientific standards rightfully required of all research involving human subjects.

The suppression of this project denies to XXY, XYY, and XYY men, their families, and society the liberty to understand and intelligently modify the behavioral effects of a high-risk genotype.

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Despite the implication in Culliton's article, there is a clear association of the XYY genotype with deviance, as judged from the frequency of XYY men in security settings compared to the rates in newborn or adult populations. While the nature and extent of this association are still not defined, the first report (1) has been amply confirmed and would be better described as "seminal" rather than "premature" [see (2) for review]. Those who deny evidence for a "link" between this genotype and criminality can only mean that there is still no direct evidence for a causal connection between the two; there is no question that there is an association. But Culliton appears to endorse an even stronger view when she states "all responsible scientists insist that the XYY chromosome is quite innocent of causing crime." The issue is, however, a complex one not subject to such simple generalizations, and revolves about our understanding of causality and human behavior. The XYY genotype may well contribute to the eventual problems of the affected male by resulting in patterns of neural organization that affect cognitive function or produce other behavioral "difficulties" (of the type Walzer and others have described) which tend to make it harder for such individuals to cope with environmental stress-

es. While there is no direct evidence for this view, the data that are accumulating appear to make it increasingly plausible. (Such a model does not assume that preventable or remedial environmental factors make no contribution to either behavioral difficulties in earlier life or deviance in later life.) The connection postulated between the genotype and deviance is not an inevitable one; whether it is "causal" awaits universal agreement on the definition of the term as applied to human behavior genetics.

Statements such as Culliton's or debate as to whether the XYY genotype is "guilty" or "innocent" only polarize the issues without addressing them. The important questions concerning the XYY, XXY, and XYYX genotypes are what factors—physiological, psychological, social, and their interactions—are associated with the increased frequency of affected males in security settings and mental institutions, and what we may learn about the possible contribution of such factors to the ultimate behavior of all individuals, irrespective of genotype.

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Bicentennial Bells

Constance Holden, in her article "The Bicentennial: Science loses out" (*News and Comment*, 8 Aug., p. 438), mentions the American Revolution Bicentennial Administration's plan for 4 July 1976: "The afternoon is to be devoted to town meetings and speeches, and at 4 p.m. (11 a.m. Hawaii time) all the bells in the nation will ring out simultaneously."

Has anyone considered what the effect might be of all that simultaneous sound vibration?

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Journal Reviews

It has long struck me as odd that scientific journals are not reviewed in "journal review" sections of scientific magazines

somewhat analogous to the book review sections that are so familiar.

Critical reviews of journals would be of interest to the scientists who read them or publish in them. They would also be of value to librarians and others who must decide which journals to take on subscription. Librarians currently have little to go on except citation counts, the significance of which is controversial.

I would like to see a respected scholarly or professional organization, one free of financial interest in the journals that would be reviewed, undertake to publish critical reviews of scientific journals at intervals of, say, 5 years. The organization that comes immediately to mind is the AAAS, and *Science* is the obvious publication in which the journal reviews should appear. If each issue of *Science* carried reviews of 5 journals, 260 journals could be reviewed each year, or 1300 in 5 years.

The scientist invited to review a journal obviously should be a person of distinction and should not have an ax to grind. On the other hand, complete innocence of involvement with any journal as an editor or member of an editorial advisory or publication board is unlikely to be found in the case of many persons of the requisite scientific distinction. A listing of current or recent connections of that type, following the name of the reviewer, would make plain at least some of his current entanglements.

The journal review should include certain standard information about the journal's history, sponsorship, size, circulation, and cost, which should be furnished to the reviewer by staff, but the heart of the review would lie in qualitative assessment of what function the journal is serving, what clientele it caters to, where it stands with respect to comparable journals, and what trends of emphasis or quality can be discerned.

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Particle Discoveries at SLAC

Martin Deutsch and Samuel C. C. Ting wrote letters published in the 5 September issue of *Science* (p. 750) with respect to the exciting discoveries in high energy particle physics. These letters contain selected references to conversations pertaining to the history of the new particle discoveries, reports of which were published in *Physical Review Letters* of 2 December 1974 (1, 2).

CHARLES C THOMAS • PUBLISHER

MOLECULAR PATHOLOGY edited by Robert A. Good and Stacey B. Day, both of Sloan-Kettering Institute for Cancer Research, New York, and Jorge J. Yunis, Univ. of Minnesota Medical School, Minneapolis. (52 Contributors) Presenting an interdisciplinary structure of concepts of disease at all levels of chemical and cytological architectural structure, this book discusses fundamental principles and primary mechanisms which can lead to enhancement of therapeutic programs and more specific treatment of disease states. The authors stress the need for investigation and analyses of disease processes at the subcellular (molecular) level and the perturbations of structure and function of organelles in health and in disease. '75, 888 pp. (6 3/4 x 9 3/4), 259 il., 56 tables, \$67.50

NUTRITION AND OUR OVERPOPULATED PLANET by Sohan L. Manocha, Yerkes Regional Primate Research Center, Emory Univ., Atlanta, Georgia. Attention is drawn here to the intimate relationship between nutrition, population and the task of feeding the masses. Directed toward thinking people of all socioeconomic strata in all countries, rich and poor, this book highlights the nutritional requirements of various age groups and the relationship between the available food supply and the number of mouths which lay claim to it. Educated laymen as well as students of sociology, anthropology, nutrition, medicine, biology, political science and history should find this book both interesting and informative. '75, 488 pp., 6 il., 11 tables, cloth-\$24.50, paper-\$16.75

A STUDY GUIDE IN NUCLEAR MEDICINE: A Modern Up-to-Date Presentation compiled and edited by Fuad Ashkar, August Miale, Jr., and William Smoak, all of the Univ. of Miami, Miami, Florida. (22 Contributors) Covered are such topics as interaction of gamma rays with matter, control of radiation exposure to man, basic mathematics of nuclear medicine, electrolytes and body composition, and essentials of rectilinear scanning. '75, 488 pp., 312 il., 44 tables, cloth-\$22.75, paper-\$17.50

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