(*Continued from page 357*)

tures, explain and expound and guide their disciples. They are the salt of the earth. A student who has had more than one or two such teachers is indeed fortunate. But many professors become so involved in their researches that they find no time for effective teaching; others have really no inclination for teaching but carry on in order to have an opportunity to do research work.

This state of affairs deserves more than ever the serious consideration of those responsible for the administration of our colleges and undergraduate schools, especially in the physical and biological sciences. No matter how many papers he has authored, the chief function of a teacher is to teach. This is an art which, from the time of Socrates, no amount of learned papers has ever been able to replace.

VICTOR G. FOURMAN
Syntomatic Corporation, New York, N.Y.

Detection of Sex-Reversed Human Beings

The finding by Barr and Bertram (*1*), and subsequently by others, that the nuclei of somatic cells may be used to determine genetic sex, and by Davidson and Smith (*2*) that polymorphonuclear leucocytes may be similarly used, has proved to be very useful in studies of sexual dysgenesis (*3*). By their use, many cases of gonadal dysgenesis have been shown to involve disagreements between the genetic sex and the sex of rearing. In all cases, the patients have been found because of their complaints with reference to faulty sexual development or functioning. Neither method for determining genetic sex has been used to detect completely sex-reversed individuals —that is, genetic females who have sired offspring, and genetic males who have given birth to offspring. This is not surprising. Such individuals would have no clinical complaints relative to their sexuality and thus would not be examined. Yet, as individuals with extreme forms of Klinefelter's syndrome (*4*), they may exist. In the following paragraphs a method for finding such individuals is proposed.

Genetic males functioning as females and mated to normal males would give rise to XX, XY, and YY offspring in the ratio of 1:2:1. Presumably the YY offspring would die *in utero*; hence the expected sex ratio would be 1 female to 2 males. The small size of human families makes it unprofitable to attempt to distinguish such a ratio from the expected ratio of 1 female to 1.05 males. On the other hand, genetic females functioning as males and mated to normal females would be expected to have only XX offspring—that is, only daughters. Families with large numbers of daughters and no sons can, of course, be readily distinguished from families with both sons and daughters.

The simplicity with which genetic sex may be determined makes it feasible to investigate the genetic sex of the fathers of families with, say, at least six daughters and no sons. (The probability that a family with six children would have no sons is $\sim .013$, on the assumption of chance distribution and a sex ratio of 1.05.)

I have such a study under way. I would appreciate information concerning families with large numbers of daughters and no sons.

ARTHUR G. STEINBERG
Department of Biology, Western Reserve University, Cleveland, Ohio

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1. M. L. Barr and E. G. Bertram, *Nature* **163**, 676 (1949).
2. W. M. Davidson and D. R. Smith, *Brit. Med. J.* 2, 6 (1954).
3. "Symposium on chromatin sex determination," *Trans. N.Y. Acad. Sci.* 20, 493 (1958).
4. W. O. Nelson, *Fertility and Sterility* 8, 527 (1957).

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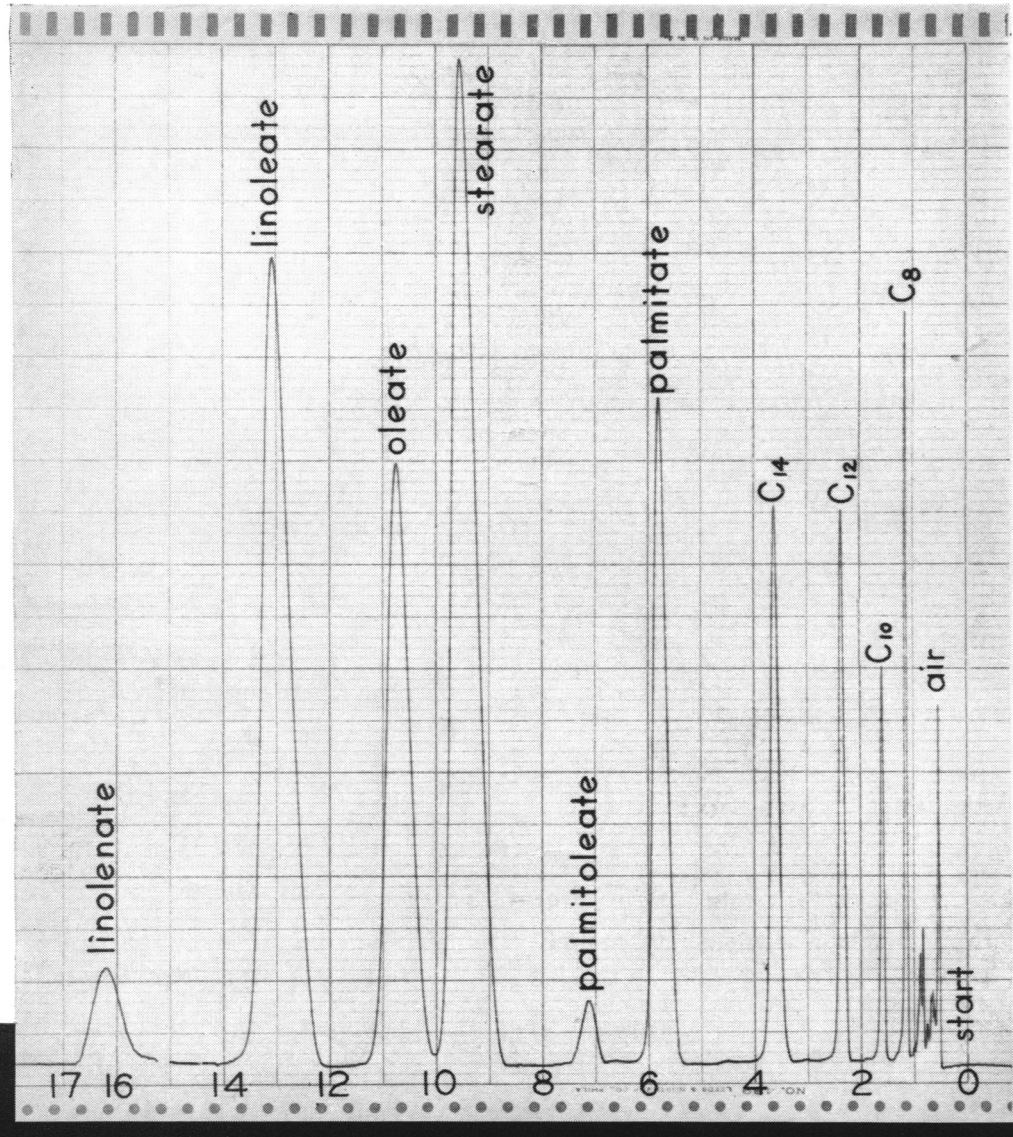

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*Hausdorff, H. H. and Brenner, N., "Gas Chromatography—Powerful New Tool for Chemical Analysis." *Oil and Gas Journal*, editions of June 30, July 14, July 21 and August 4, 1958.

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