

later period. Innes shows that the same trend is continued in a comparison between rates for 1931-1933 and 1934.

A further important contribution by Innes is made through isolating the trend in the poorest fifth from trends in four other classes of boroughs. This analysis shows that the high correlation between fertility and social status in London is chiefly due to the conspicuously high fertility of the very poor boroughs. The differences between the other groups have been small, and there has been some crossing of trend lines among them. Decline in fertility in the poorest boroughs has paralleled that in the others, but the relative differential had not narrowed up to 1931-1933. The data for 1934 give some suggestion of a narrowing of this differential; but the outlook is uncertain.

The broad implications of these studies, considered with reference to studies in the United States and other countries, seem to the reviewer to be somewhat as follows. Regional and social differentials are in part a phenomenon of the general transition from "natural," uncontrolled fertility to "rational," controlled fertility, which is accelerated in some groups and retarded in others. He is confident that the wide differentials between regional groups in the United States will be greatly reduced during the next few decades. Among urban populations, the poorest families show the greatest lag in family limitation. Whether and how long the economically lowest stratum will continue to be characterized by disproportionate fertility cannot be foretold. In any event, for the present and for some decades to come, high fertility is concentrated in the very areas and families where conditions unfavorable to child development are most apparent.

FRANK LORIMER⁵



STUDIES IN HUMAN FERTILITY

THE latest product of the fruitful labors of Professor Raymond Pearl¹ and his laboratory assistants is one of the most interesting and significant contributions ever made to the study of basic population ques-

⁵ Secretary, Population Association of America.

¹ Pearl, Raymond: *THE NATURAL HISTORY OF POPULATION*. New York, Oxford University Press, 1939. 416 pp. \$3.50.

tions. It presents the results of a truly prodigious amount of statistical analysis in a clear expository style. In spite of its numerous tables, graphs, and statistical manipulations, the book is remarkably free from obscurity and ambiguity. Its value is greatly enhanced by eighteen pages of notes following the text, and by two appendices and a bibliography of about 700 titles. The latter alone makes the work indispensable for any student of human biology in its broader aspects. Much of the material has been published in scientific journals here and there and it is a great service to have these scattered researches brought together into a unified treatment. This book will stimulate numerous additional studies because it is highly suggestive of methods, sets up a good many precisely calculated marks to shoot at, and raises a number of puzzles for which answers can be found only by collections of *ad hoc* materials. Moreover and meanwhile it places much discussion on a sounder, more realistic basis.

For our purposes the treatise may be divided into four unequal parts. The first two chapters (97 pages) deal with the biological aspects and background of fertility. The second part (Chap. III, 71 pages) studies the present expression of fertility in the American population. The third part (Chaps. IV and V, 79 pages) presents the results of an investigation, made possible by the Milbank Memorial Fund, of the reproductive histories of some 30,000 American women, with special reference to the extent and effectiveness of their contraceptive efforts. Finally, there is a short chapter (39 pages) on the past, present, and future of world population, a chapter not very well integrated with the main body of the work.

The first part deals with such basic matters as the survival and reproductive urges; the inheritance of fertility; the variations of fertility with age, class, and race; the reproductive span; frequency of coitus and its relation to pregnancy rates; "litter size"; and reproductive wastage in relation to race and contraceptive effort. While these matters have been treated by various students and our author draws upon their results from time to time, there are, in addition to his summaries and reanalyses, some noteworthy original additions. For example, the study of the decline of fertility with age (pp. 39-45), not as manifested by women viewed in the large but by a highly selected group of women who continued to be overtly fertile to specified age classes, leads to the conclusion that about 56 per cent of the women who are previously fertile cease to be so at central age 27.5 years. The table (1, Appendix 1) presenting this material suggests that the lower the initial fertility (ages 15-19), the

higher the subsequent level of fertility and the longer it continues. The figures on copulations per pregnancy by age are somewhat surprising, but quite clearly reveal man as a poor breeder.

The study of the reproductive pattern in the United States in 1930 reveals a number of interesting and some surprising results. It is estimated roughly that only 7.4 per cent of the theoretically physiologically capable women bore a child, live or still, in 1930 (p. 102); this percentage, for live births only, in twenty-three identical states, dropped from 9.12 in 1920 to 6.99 in 1930 (p. 145). If various allowances are made for sterility, sickness, and other factors, it is concluded that not over 10 per cent of the physiologically capable women actually bore a child in 1930. It is found that the nativity classes bore children in 1930 almost exactly in proportion to their numbers in the population. This was a change from 1920 when the native-white women were contributing less than their share. One factor here is, of course, the higher age distribution of the foreign-born women. Another, to which more attention should be given, is the addition to the "native born" of the American-born daughters of prewar immigrants. These daughters were relatively fertile recruits to the ranks of the native born. They help to explain also the fact that the decline in fertility, 1920 to 1930, was less for the native than for the foreign or Negro mothers, respectively 18, 39, and 27 per cent. It is significant that this decline was least in the age class 15-19 and increased with advancing age. Does this indicate some revival of the desire for children among young married people; or is it merely due to the fact that most couples wish one or two children at least and want them early; or does it mean that the young things use birth control little and badly? The marked decline among the colored population cannot reasonably be explained as due to changes in proportions married, nor by age changes, nor by improved contraceptive technique, except perhaps in part; one may surmise that it was due to increase of sterilizing infections.

There are numerous other suggestive findings in this section. One is struck, however, with a certain variability in findings, due to diversity of samples and the necessity of resorting to various assumptions in the treatment of materials not collected to answer specific queries. While it seems clear that the Negro women breed earlier and show less wastage, they reveal in two studies higher age-specific pregnancy rates (pp. 25 and 88-90), but in the nation as a whole they show lower age-specific birth-rates, but a higher weighted mean birth rate. The fact that the whites

and the Negroes exhibit about the same mean relative fertility, though one uses contraception less and with less effect than the other (also has higher pregnancy rates and less wastage) is, indeed, somewhat of a dilemma, as the author says (p. 114). Then one wonders how much value attaches to the long calculation under varied assumptions designed to estimate the effectiveness of contraceptive practices in the American population (pp. 151-160), when, at the end, the author acknowledges that there has been no way of taking into the account the really successful contraceptors, and is reduced to the rough guess that, if they were included, the percentages of effectiveness would be about doubled.

The third part, to which the others appear to be preliminary, analyzes the reproductive histories of upward of 30,000 women. These histories were gathered under the very best auspices and undoubtedly represent the most reliable and extensive set of data thus far collected on the subject of contraception. Moreover, the group appears to be representative of the American population in several important respects. It is estimated that 55 to 60 per cent of the sample had made some contraceptive effort, the percentage being much higher among the prosperous and the well educated. The effectiveness was also greatest among those who used it most. The question remains, however, as to how far these results are truly representative of what is taking place in the American population. One must continually remind himself that Pearl's data do not include those contraceptors who are most successful in the same proportion that they include the less successful. Moreover, while his "noncontraceptors" constitute a clean-cut, homogeneous group, in that they had none of them attempted birth control at any time in any manner, the "contraceptors" are a heterogeneous category, including all the others. It may reasonably be assumed that women who at no time tried birth control were as a class either fairly content to have all the children nature would give them, or were inhibited by fear, moral, or religious feeling from interfering in any way with nature. It is not surprising that the pregnancy wastage, and especially that due to criminal abortion, is small in such a group. In the other category, however, may well have been a number of women who had resorted to abortion *before* they attempted contraception, as well as all those who used contraception either clumsily or intermittently.

Such considerations raise some doubt as to the value of his figure as to the efficiency of contraception, especially in the case of the multiparae.

Some of these women, no one knows what proportion, would have had one or several children before they began the use of contraceptives, and all these births would have been credited to them. The difference between them and the noncontraceptors (see method pp. 209 and 215) would thus have been appreciably reduced. Then the noncontraceptors would, in all probability, include the larger proportion of the women of low marital and natural fertility; the contraceptors, the larger percentage of those with relatively high marital and natural fertility. There might well be considerable difference in the ease with which fertility was controlled by these two groups.

The final chapter is notable for its revision of the estimate of world population limit under present trends, which increases the limit by 31 per cent. One may conclude that the calculation of asymptotes is a pleasant pastime for the mathematically inclined, but not to be taken too seriously as a prophecy of what will happen. (See in this connection the estimate of the Algerian population in Vol. VI, *Congrès international de la population* in comparison with Pearl's 1925 estimate.) This chapter, however, makes it clear that the world is getting full of people and that its resources are very probably undergoing some depletion. One might well ask what can one do about all this; our author's answer would seem to be "Better leave matters to nature."

If space permitted one would like to comment on this and several other predilections of the author. He scorns the eugenists and dislikes the birth controllers. So far as this means merely that he does not wish to be associated with any brand of crusaders, well and good. Unfortunately it leads him to put into the minds of the contraceptionists the very absurd assumption that every copulation leads to a pregnancy (pp. 70-71). It leads him to imply that poor contraception increases the abortion rate (pp. 94, 222, 230, 239-240). This thesis of "the working partnership between criminal abortion and birth control" runs as a sort of minor theme through the book. Since contraception is shown on every count to be more or less effective, one may reason as follows: among women wishing to avoid pregnancy some who try birth control will be successful; some who fail will, for various reasons, bring the pregnancy to term; others who fail will resort to abortion. May one conclude that therefore there are more abortions than there would have been in the absence of contraception? In a group of women determined to avoid a birth at all costs, the successful contraceptors will show fewer abortions. Our author,

himself, notes (pp. 241 and 223) regarding the highest economic class, "their proportionately infrequent resort to criminal abortion is to be found in the relatively high efficiency of their contraceptive efforts."

Other predilections are the author's favor for Doubleday as against Spencer, though there are several places where the latter's thesis, which certainly needs a modernized restatement, might well apply—places which puzzle Professor Pearl (pp. 37, 79, 211, etc.). Then there is the question of density, which is brought in in many places, though now it seems to be less density as such and much more the social life conditions associated with urbanism and industrialism. Finally, there seems to be some reliance on some mystical "innate powers of adaptation" to bring us out of the mess into which we have confessedly gotten ourselves. One may well share the author's skepticism as to the possibility of effective collective action, but in last analysis one must put his faith in human efforts guided by science or in what for all practical purposes is God. The scientist will scarcely hesitate to make his choice.

FRANK H. HANKINS²



THE VOLUNTARY CONTROL OF FERTILITY

THE new edition of Dr. Dickinson's *CONTROL OF CONCEPTION*¹ answers an increasing demand for an authoritative text on the techniques for controlling fertility. It deals with all aspects of fertility control and offers to the inquiring student a wealth of information on contraception, sterilization, and therapeutic abortion.

The present edition includes new material on the comparative effectiveness of different types of contraception as used in selected population groups. It summarizes recent research on the "safe period" and includes many new diagrams and drawings, illustrating the relation of the techniques of contraceptive practice to human sex anatomy.

On the basis of the latest research in the chemistry of spermicidal compounds and on the quality of a number of commercial contraceptives, Dr. Dickinson frankly recommends several commercial brands of con-

² Professor of Sociology, Smith College.

¹ Dickinson, Robert Latou: *CONTROL OF CONCEPTION*. Baltimore, The Williams & Wilkins Co., 2nd Edition, 1938.