

blunder into narrow straits and inlets and explore bays where they readily fall victim to the intricacies of the native baklad or fish corrals. Inquiry among the Malay fishermen often reveals the capture of whale

sharks in fish corrals at various times in the memory of the older men.

ALBERT W. C. T. HERRE

STANFORD UNIVERSITY

SCIENTIFIC BOOKS

PARENTHOOD

The Twilight of Parenthood. By ENID CHARLES. W. W. Norton and Company, New York. Pp. vi + 226. \$2.50.

THERE have been three main periods in the history of opinion on population problems. In the first there was general and somewhat naive agreement with the Psalmist that children are like arrows in the hand of a giant, happy is the man who has his quiver full of them—in short, that increase in population is always desirable. In 1798 Malthus ushered in the second period by pointing out that the potential reproductive capacity of mankind is quite capable of outrunning the means of subsistence, and for more than a century afterwards the dominant note among writers on the subject was the fear that overpopulation would reduce mankind to misery. It is true that since about 1870 the birth rate in most European countries has been declining, but as the death rate also declined population kept on increasing and the era at which it would outrun the means of subsistence seemed merely deferred. In 1925, however, Dublin and Lotka pointed out that a decline in the birth rate results in a larger proportion of women in the child-bearing ages than in a stable age distribution and that consequently if the decline in the specific birth rates at ages were arrested the crude birth rate would continue to decline until the stable age distribution was reached. On the other hand, with constant death rates at ages the crude death rate would increase, so that a population which was actually increasing would ultimately with the same specific birth and death rates become stationary or even decrease. The United States, they found, was close to this potentially stationary condition in 1920, and Kuczynski has since shown that a number of European countries have reached a state of potential population decrease. The dominant note is no longer fear of overpopulation but rather of population decrease and the impression left on the mind of the reader by some of the more fervid authors is that unless something is done about it mankind will become extinct not later than next Tuesday.

Dr. Charles begins her book with an account of the improvements in agricultural science which have increased the means of subsistence. The second chapter, which gives a simple explanation of the methods of demographic statistics, leaves rather the impression

that the newer methods are due almost entirely to Kuczynski. As a matter of fact the net reproduction rate was first used by Boeckh, while the development of the mathematical analysis of the dynamics of population is mainly due to Lotka. The decline in the birth rate and the differential fertility of social classes are next discussed and it is pointed out that if, as there is some reason to believe, the birth rates of the poorer classes, who form the larger part of the population, are approaching those of the wealthier classes, the birth rate of the whole population will decline still further.

The fifth chapter is devoted to a discussion of whether the observed decline in the birth rate is the result of increase in density of population, as Pearl has concluded, or of some special cause such as the spread of contraception. It is scarcely correct to say that "Pearl himself was unable to offer any explanation of the fall in fertility observed in *Drosophila*." The latter¹ has found evidence "that crowding produces the observed effect on rate of egg laying primarily, though probably not solely, as a result of a collision or interference action of the flies upon each other, which alters the normal physiological equilibrium and processes of the individual, particularly with reference to three major functions—food intake, energy output in muscular activity and oviposition." Nor is the observed inverse relation between density and fertility confined to *Drosophila*. It has also been observed in the flour beetle *Tribolium* over the greater part of the density range, in fowls and in human populations.

The last chapter deals with changes in social organization which may make parents willing to have more children. The system of family allowances, Dr. Charles points out, has had little influence on the birth rate in either France or Australia, where it has been tried on a large scale. Her own hope is for a new system of education by which the child would "begin to be a useful member of the community from the age of three onwards. . . . In this way children would not be felt to be a burden either to those immediately responsible for them or to the community as a whole."

JOHN R. MINER

THE JOHNS HOPKINS UNIVERSITY

¹ R. Pearl, *Jour. Exp. Zool.*, 63: 57-84, 1932.