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THE EFFECT OF THE WAR ON THE CHIEF FACTORS OF POPULATION CHANGE¹

THERE have recently appeared some figures² regarding the "mouvement de la population" in France, Prussia and Bavaria which appear to deserve somewhat more careful analysis than they have received. These figures are derived from official sources and are conveniently collected in the place to which I have made reference.

There are three factors fundamentally concerned in producing changes in the absolute size of the population in a given fixed area (country, province, etc.). These are:

1. The birth-rate,
2. The death-rate,
3. The net immigration rate.

Of these factors the two first are, generally speaking, of the greatest biological interest. This is particularly true of such political units as France, Prussia and Bavaria, where in normal times net immigration makes no significant contribution to the population. Under war conditions permanent immigration to these units was *nil* and may therefore be safely neglected in the following discussion.

The relation of birth-rate and death-rate changes to population changes is a simple one and may be put this way. If in a given time unit the percentage

$$\frac{100 \text{ Deaths}}{\text{Births}}$$

has a value less than 100, it means that the births exceed the deaths, and that the population is increasing within the specified time

¹ Papers from the department of biometry and Vital statistics, School of Hygiene and Public Health, Johns Hopkins University, No. 14. This paper recently formed the basis of an evening's discussion at the writer's seminar.

² *Jour. Soc. Stat. Paris*, Soixantième Année, pp. 356-361, December, 1919.