SHORTER NOTICES

*An Elementary Treatise on Frequency Curves and their Application
in the Analysis of Death Curves and Life Tables.* By Arne Fisher.
Translated from the Danish by E. A. Vigfusson. With an intro-
duction by Raymond Pearl. American Edition. New York, Macmillan,
1922. xv + 244 pp.

This work is divided into two chapters. The first, "An Intro-
duction to the Theory of Frequency Curves", is practically the same
as Chapters XIV–XVIII of *Mathematical Theory of Probabilities*,
by the same author. This chapter takes up the treatment of frequency
curves associated with the names of Laplace, Poisson, Charlier, Thiele
and Gram, and serves as the theoretical introduction to the second
chapter entitled "The Human Death Curve." In this chapter the
author presents a method of constructing mortality curves from death
lists by age and cause without knowledge of the number exposed to
risk. In the United States this method has been received with various
degrees of enthusiasm—from that of the extremely eulogistic intro-
duction to the book down to utter condemnation by several well known
actuaries whose views carry much weight. It is an axiom in actuarial
science, often repeated and emphasized, that a mortality curve cannot
be constructed from death lists alone. Some criticisms seem to imply
that Fisher had done just this thing and a man of straw is created
and warmly pelted. But he does not claim to get a mortality curve
from death lists alone. It is true that he does not have the exposed
to risk, but he has a substitute in something biologists and physicians
have told him about the frequency distribution of deaths according
to age from various classes of causes.

Dispensing with actuarial technicalities, the problem in the language
of the theory of probabilities is as follows:

A bag contains a large number of black and white balls. Each ball
has a number stamped upon it which may be any integer from 0 to
105. The black balls are also stamped with one of the letters a, b,
c, d, e, f, g, h. Balls are drawn from the bag one at a time and
replaced. A record is kept of the numbers and letters on the black
balls, but no attention is paid to the numbers on the white balls.
Later it is found desirable to construct a table of d_x/l_x, where d_x is
the number of black balls, marked with the number x, and l_x is the
total number of observed balls so marked. It is of course impossible
to make such a table from the black ball records. But there is
available information about the distribution of the balls in other bags

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