

into another class where new mortality rates are not needed. This marriage insurance seems to be intended primarily for children or minors who upon marriage are to receive the insurance as a species of dowry. In France, marriage insurance was authorized by law in May 1921. From $p(x, y)$, the probability that a man of age x will reach age y , usually written ${}_y-xp_x$, there is formed $q(x, y)dy = [-\partial p(x, y)/\partial y]dy$, the probability that a man of age x will die between ages y and $y+dy$. Likewise $w(x, y)dy$ is written as the probability that a man of age x will enter a new class—of the disabled or the married—between ages y and $y+dy$; and $p^b(\beta, \beta, y)$ is the probability that a man now of age β , who entered the new class b at age β , will survive to age y . With the original class designated by the superscript a , a typical equation is

$$p(x, x, y) = p^a(x, y) + \int_x^y w(x, \beta)p^b(\beta, \beta, y)d\beta.$$

This is the probability that a man now of age x and in class a will survive to age y in class a or in class b . The annual rate $W(x, x+1)$ of withdrawal from class a , by disability or by marriage, is the integral of $W(x, \alpha)d\alpha$ from x to $x+1$. After a great many pertinent distinctions have been made and numerous probabilities defined, suitable approximations for the required aggregates are made with the aid of the Newton interpolation formula. Then follows a critical note on the use of the product formula for compound probability. Finally, there are tables giving disability and marriage rates.

Section V is a continuation, in the same excellent style, of Section IV. From the complex probabilities evolved in Section IV, net premiums for a large variety of forms of insurance and annuities are deduced, and the corresponding reserves or policy values. The proper loading to be added to the net premium to form the office premium is treated at some length with the aid of the Tchebycheff inequality. Thus, for a large company, the percentage loading for safety is very small. The last chapter is devoted to a somewhat detailed discussion of the validity of the Tchebycheff inequality as utilized in the preceding chapters.

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Höhere Mathematik. Teil IV: *Übungsaufgaben mit Lösungen.* Heft II. By R. Rothe. Leipzig, B. G. Teubner, 1933. 53 pp.

This pamphlet gives interesting and instructive exercises (followed immediately by their solutions) on calculus topics included under the headings: (a) functions of two variables, their geometric representation, partial derivatives, and maxima and minima; (b) the differential geometry of plane curves, including properties of tangents and normals, order of contact, curvature, polar coordinate forms, asymptotes, and singular points. Further there are questions relating to complex numbers and the simpler functions of a complex variable.

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