a pamphlet on Vector Analysis printed in 1884, but not published, Gibbs suggested as possible and perhaps preferable the notation $d/d\mathbf{r}$ in place of $\nabla$. This idea he never developed, at least so far as is known, and consequently Dr. Fischer's monograph fills an evident gap in the theory.

E. B. WILSON.

CAMBRIDGE, MASS.,
*June* 23, 1904.

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## THE MATHEMATICS OF INSURANCE.

*Versicherungsmathematik.* Von ALFRED LOEWY. Leipzig, Sammlung Göschen, 1903. 145 pp.

IN publishing this book the "Sammlung Göschen" has certainly followed out successfully its expressed policy of giving to the public a brief, yet clear and up-to-date development of one of the most interesting applications of mathematical theory. While a reader who is unacquainted with the subject of life insurance would find Professor Loewy's exposition somewhat too condensed, anyone with a knowledge of elementary algebra who has some acquaintance with the business aspect of the subject cannot fail to appreciate the value of this little pocket edition which contains in its 145 pages the development of all the important formulæ needed by the actuary.

While one recognizes at once the meanings of many of the words such as Nettoprämie = net premium, Sterblichkeitstafel = mortality table, the significance of some of the German expressions, of which a glossary of 15 follows, is not at all evident. Indeed, a few are not to be found in the average German-English dictionary and their meaning can only be learned from the context.

Zinsfuss = rate of interest,
Zinseszins = compound interest,
Barwert = present value,
Leibrente = annuity,
Erlebensversicherung = endowment,
postnumerando = payable subsequently,
pränumerando = payable in advance,
Rückversicherung = reinsurance,
Bruttoprämie = gross premium,
Prämienrückgewähr = return (of part or whole) of premium,
Rückkaufpreis = surrender value,
Passiva = liabilities,
Aktiva = assets.