LIFE ASSURANCE PRIMER: A TEXT-BOOK DEALING WITH THE PRACTICE AND MATHEMATICS OF LIFE ASSURANCE, FOR ADVANCED SCHOOLS COLLEGES AND UNIVERSITIES

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HENRY MOIR

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Trieste

Life Assurance Primer

A Text-Book

Dealing with the Practice and Mathematics of Life Assurance, for Advanced Schools Colleges and Universities

By

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THIRD EDITION

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PREFACE TO THE THIRD EDITION.

The issue of this third edition has been delayed because the plates of the second edition were stolen. This has proved a blessing in disguise, as it necessitated a complete resetting of the book and offered an opportunity to make a thorough untrammelled revision of the entire work; and this has been done. Many additions have been made to the text throughout; and a new chapter has been added dealing with the organization and management of a life company, giving information which students and even company officers have found difficulty in obtaining elsewhere. After each chapter, at the request of the professors in several universities, some questions for students have been added; these can generally be answered from the information supplied in the preceding chapter, but in some instances they call for original thinking, constructive work, or knowledge of the conditions of outside business life. Many changes in conditions have taken place since the previous edition was published five years ago, both in the practice of companies and in the laws affecting vital points in the business. All such matters have been brought completely up to date, while the notation in mathematical sections has been changed so as to conform to the latest rulings of the Actuarial Society of America in harmony with international practice. In other respects the remarks made in the Preface to the Second Edition still apply as follows:

"The only criticism of any consequence which has been made against the Primer is that it is not sufficiently elementary. But the book was not written for children; nor was it prepared for those who, with merely a general education, could read it through at a sitting, and at once understand it all. It was meant to be a study for men, willing and able to devote time to a careful reading, and *anxious to obtain true knowledge of the subject* to the

extent of taking pains to digest it, and even to read other collateral publications. Life assurance is a source of unbounded blessing to men; even more so to women and children. But knowledge of the subject does not enter our minds intuitively; it can be acquired only by diligence, and it would be well if this social obligation were made part of the general school training.

"One of the commonest errors is to assume that life assurance is an investment, and that premiums paid for protection are like deposits in a savings bank. It is difficult to convince many men, even intelligent men, who have paid for life assurance for ten years and who have lived, that their premiums should not *all* be held by the Company increased by interest. Yet if this were so the heirs of those who died could get only the amount of their own premiums, with interest, less expenses; while we know that the full amount assured is paid even if death take place only a few days after payment of the first premium. This is the fundamental difference between a savings bank and a life assurance company. If such general principles were known more widely, many would avoid those disappointed expectations which have caused so much heartburning.

"Widespread interest has been aroused by the various investigations of Life Assurance Companies. These have had the effect of directing the public gaze to an important subject; and, although much of the information given in sensational daily papers is highly colored, and often incorrect, still the permanent effect on the minds of the people will be for good. We cannot talk on any subject without gradually imbibing more and more of the truth about it, therefore the freer the discussion the better. If this book enables a few people to correct wrong impressions which have crept into their minds, the author will feel that his work is not in vain."

HENRY MOIR.

New York, *1st November*, 1912.

INTRODUCTION.

There has been a tendency within the last few years to extend University Education in the direction of life assurance, treated sometimes from an economic standpoint and sometimes mathematically; and the want of a Text-Book dealing with elementary principles has been greatly felt. It is presumed that those reading the technical portions of the following work already possess a slight knowledge of algebra, rather better than that usually afforded by the High School course. The subjects have been explained as far as possible in a simple way, so that the reader who may not have this algebraic knowledge may yet be able to grasp the general outlines, even though he may pass over many of the mathematical demonstrations.

For those who propose to complete their actuarial studies, many books are available, in particular the Text-Book of the Institute of Actuaries, which is recognized as the authoritative work on Actuarial Science. That work, however, is elaborate, and is designed for advanced students; whereas this Primer, as its name implies, has been prepared for those who may wish to obtain a proper understanding of the principles, but who are not yet prepared to undertake the more advanced study.

The notation used in the Institute Text-Book was adopted by the International Congress of Actuaries, after giving careful consideration to other systems. That notation is therefore used herein so far as it is necessary, and a brief explanation is incorporated in the appendix. There is also included in the appendix a sufficient number of tables to afford the means of illustrating the subjects discussed, and give students some practical knowledge of the questions with which they may deal.

One of the aims of the work has been to include such information on actuarial subjects as every official of a life assurance

company should possess. The Actuary and his assistants should have a full grasp of the details, with technical knowledge to solve the more intricate problems; but general principles should be mastered by the other officials, so that all departments of the work may be conducted in harmony.

CONTENTS