INSURANCE GUIDE AND HAND BOOK

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THE

INSURANCE GUIDE

AND

HAND-BOOK.

BEING

A GUIDE TO THE PRINCIPLES AND PRACTICE OF LIFE ASSURANCE, FIRE INSURANCE, MARINE INSURANCE, ACCIDENT INSURANCE, BURGLARY INSURANCE, EMPLOYERS' LIABILITY INSURANCE, FIDELITY GUARANTEES, MOTOR CAR INSURANCE AND THIRD PARTY AND PUBLIC LIABILITY INSURANCE.

SIXTH EDITION, IN TWO VOLUMES.

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VOLUME II. JOSEPH H. MATTHEWS, F.C.I.I.

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THE INSURANCE GUIDE AND HAND-BOOK.

SIXTH EDITION.

Volume II. on Fire, Accident and Marine Insurance, edited by JOSEPH H. MATTHEWS, F.C.I.I., *of the Alliance Assurance Company, Limited, comprises the following Articles :—*

FIRE INSURANCE:

THEORY, &c., OF FIRE INSURANCE,
by C. WALTER, B.A., F.C.I.I., of the Commercial Union Assurance Company, Limited.

LEGAL ASPECTS OF SOME PRIMARY PRINCIPLES,
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SUBROGATION & SOME REMARKS ON CONTRIBUTION,
by GUY F. JOHNSON, Barrister at Law.

LOSS OF PROFITS INSURANCE,
by A. G. MACKEN, of the Royal Insurance Company, Ltd.

SETTLEMENT OF FIRE LOSSES,
by PHILIP F. BROOKS, of Messrs. Howell & Brooks, Loss Assessors, London.

FIRE EXTINGUISHMENT,
by CHAS. BALDWIN, A.C.I.I., of the Alliance Assurance Company, Limited.

HISTORICAL SURVEY (being a reprint from the Fifth Edition),
by H. S. BELL, Barrister at Law.

ACCIDENT INSURANCE:

PERSONAL ACCIDENT
(being a reprint from the Fifth Edition revised by C. E. GOLDING, LL.B. (Lond.), F.C.I.I., Treaty Reinsurances Limited).

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PHYSIOLOGY and LIST OF COMMON MEDICAL TERMS,
by H. D. O'DONNELL, of the London & Scottish Assurance Corporation, Limited.

FIDELITY GUARANTEES
(being a revised reprint of the article in the Fifth Edition).

MARINE INSURANCE:

THE STUDY OF MARINE INSURANCE,
by G. E. MARTINDALE, F.C.I.I., of the Thames and Mersey Marine Insurance Company, Limited.

VOLUME I.

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THE

INSURANCE GUIDE AND HAND-BOOK.

PREFACE TO THE SIXTH EDITION.

VOLUME I.

In presenting this volume for the consideration of those who are interested in the subject of Life Assurance, the Editor desires to refer to the objects which have been kept in view during the work of preparation and to the manner in which the various subjects have been treated.

As regards the objects, it was felt that advantage might be taken of the current opportunity to make the volume still more directly useful to students preparing for the examinations of the Chartered Insurance Institute. At the same time, it appeared to be inadvisable—especially in view of the history of the work—to attempt to convert it into a mere text-book for these examinations. Accordingly, the present volume has been compiled generally upon the lines of the previous one, but new subjects have been introduced, and, moreover, an organized attempt has been made to supply lists of reading for the use of actuarial and other students. In compiling these lists, particular attention has been paid to the papers appearing in the Journal of the Chartered Insurance Institute.

The subjects themselves cover most of the manifold questions arising in connection with Life Assurance. Throughout the articles, the various contributors have endeavoured to avoid actuarial technicalities—in some cases it is impossible to achieve this aim entirely, but an effort has been made at least to supply definitions and explanations. Numerous references are given to the Journal of the Institute of Actuaries and other actuarial publications, so that those who either desire, or are constrained, to go more deeply into any subject may not lack some guidance. The dates of the various books and papers have been inserted in order to show, to those unfamiliar with the references, whether or not the question of applicability to modern conditions has to be considered.

The Editor cannot omit a brief reference to his predecessor, the late Mr. H. W. Andras. The Fifth Edition of this volume was planned by him, and, in the execution of his purpose, he gathered together a band of contributors each expert in a particular subject. The present volume is based upon the foundations so well and truly laid; developments, alterations and rearrangements there are—as indeed there must be—but the general scheme remains. It is a source of great satisfaction to the Editor that, of those who contributed to the previous edition and who are still in active practice, all save two are represented by articles on this occasion. As regards the exceptions—both regretted—one has arisen through ill-health and the other from a change of official duties with consequent inability to keep in touch with a subject which is particularly full of detail.

With regard to the important subject of Titles, it may be well to mention that, although the treatment is divided between two contributors (following the precedent set by Mr. Andras), the Editor has been able to secure the co-operation of two gentlemen who, in by-gone years, were closely associated in official life.

While new subjects have been introduced, it remains true that there are others of great importance which are omitted. It will be found, however, either that these are of a practical nature (such as office procedure, correspondence, etc., which must be studied in actual experience), or else that they are especially technical, such as medical terms, diseases, etc., which cannot be treated at all adequately without a great and impracticable extension of the bulk of the book.

When the Fifth Edition appeared, there was a strong request by several reviewers for an index in subsequent editions—the deficiency has been remedied on the present occasion and due consideration has been given to a few other criticisms. It has not been thought necessary to reproduce the synopses of the chapters, nor did it appear to be worth while to give a list of companies transacting life business, since such particulars can be obtained (annually brought up to date) in various well-known publications. The schedule of Stamp Duties in the Fifth Edition has been reduced considerably without, it is believed, affecting the value of the list to students of life assurance.

In consequence of the willing co-operation of all the contributors (both old and new) the work of editing the volume has been lightened very materially. Moreover, the Editor has received from his colleague, Mr. P. F. Hooker, A.I.A., not only most useful assistance in the preparation of the Lists of Reading and of the Index, but also unstinted and enthusiastic help in various other directions. It remains to express to the Editor of the *Stock Exchange Gazette*, deep appreciation of his courtesy in a matter which is acknowledged formally at the beginning of Chapter II.

R. C. S.

1, Bartholomew Lane,
London, E.C. 2.
September, 1922.

Note.—The Publishers desire to state that copies of the supplement to the 5th Edition, entitled "Historical Review of Life Assurance in Great Britain and Ireland," can still be obtained from them.

THE

INSURANCE GUIDE

AND

HAND-BOOK.

(SIXTH EDITION).

VOLUME I.—LIFE ASSURANCE.

CHAPTER I.

INTRODUCTION.

By R. C. SIMMONDS, F.I.A.

IT is proposed to follow the example set by the late Mr. H. W. Andras in connection with the Fifth Edition of this work and to pass in review the chief features of interest which are disclosed by a study of life assurance during the period 1912-1922. Inevitably, the war of 1914-1918 must claim a prominent part in such a review—in fact, it was so great a feature as to render the whole period abnormal. In the small space available, we can only hope to mention the more important of the many ways in which life assurance was affected—we proceed to set them down in summary form :—

(1) The effect upon extra premiums.
(2) The effect upon mortality.
(3) The effect upon investments.
(4) The effect upon the rate of interest.
(5) The effect upon expenses.
(6) The effect upon new business.
(7) The effect upon valuations.
(8) The effect upon bonuses.

The effect upon extra premiums was marked, although, as we shall see, certain influences came into play to restrict its full operation. At the commencement of the war, British offices might have been divided into two classes as regards military and naval risks for civilian holders of existing policies—the one class giving unrestricted contracts, which thus empowered the assured to engage in any form of service without paying any extra charge; the other reserving in its policies power to impose an extra at its discretion. Having regard to the national emergency, the offices in the second class agreed to waive their rights so that, in practice, civilians were allowed to join the Army or the Navy without being called upon to pay any extra premiums even for service outside the United Kingdom. In the case of persons who, at the date of effecting their policies, were liable to be called up for service, there were two common courses in operation before the war. Either a moderate, but constant, extra premium was paid in time of peace as in that of war, or else the assured agreed to the imposition of such surcharge as might be fixed by the office when he came to engage in active service. In the case of policies within the latter category, a very heavy extra was needed, but, in practice, the offices consented to a limitation of their legal rights and, as a rule, asked for not more than 5 guineas per cent. for one year or less. Such a rate proved to be quite inadequate.

The existing policyholders having been protected on generous lines, it was not to be anticipated that the offices could afford to accept new business on such terms. The extra premiums for service abroad commenced, in the case of fresh assurances, at about 7 guineas per cent. for one year or less, and rose steadily as the true nature of the struggle became more and more obvious, until twelve, fifteen or even more guineas were charged. In fact, it was not very long before several companies refused altogether to cover the extra risk abroad, and issued policies which fell automatically into abeyance when the life assured left this country. There was a provision whereby reinstatement was to be allowed, after return at the close of the war, on proof of eligibility for assurance. In some cases, premiums continued to be payable subject, of course, to return in the event of death.

In addition to fixing extra premiums for military, naval or aerial service outside the United Kingdom, the offices had to make provision for civilians travelling on business to foreign countries. Considerable surcharges were imposed in view of the submarine menace.

Speaking generally, service in the Army at home was allowed free of extra charge, but, as regards the Navy, the R.F.C. and the R.N.A.S., the terms depended upon circumstances.

The effect upon mortality is so tragically obvious and so pitilessly personal that we need not linger to discuss it, save to remark that the concentration of the deaths at the younger ages intensified the influence of the increase in numbers. The actual loss to the offices must be measured (as is pointed out in Chapter IX.) not by the amount paid in respect of the claims, but by the difference between the actual strain and the expected strain—the word "strain" meaning, for the present purpose, the difference between the sum assured and the reserve held in respect thereof. As a matter of cold fact, the real loss in respect of war claims absorbed, in several offices, about one-third of the normal surplus of a quinquennium.

The effect upon investments was felt (although the cause was perhaps unsuspected) even before the outbreak of hostilities. Depreciation of securities occurred in 1913 and, immediately the international tension began to increase in July, 1914, the financial centres of the world became very disturbed and prices fell heavily. The Stock Exchange was closed for several months and, upon its being reopened, a system of minimum prices was introduced. Depreciation remained more or less acute throughout the war (being at its worst early in 1918) but, after the Armistice, sentiment changed, and, for a time, there was a great improvement; in 1920, however, a collapse occurred and very heavy falls were general, so much so, that the position towards the end of that year was worse than at any period of the war itself. The last few months have witnessed another marked revulsion—this time in an upward direction—particularly in gilt-edged securities which, at the time of writing, are buoyant.

The effect upon the rate of interest can be inferred to a great extent from the effect upon investments. In most cases (excluding certain Continental securities in respect of which default arose) the gross income from the assets remained safe and was received regularly. In spite of this, the market prices declined heavily, so that the gross rate of interest rose. Simultaneously, it was easy to obtain a very satisfactory return in respect of new money coming forward for investment. These apparent advantages were, however, counterbalanced by the tremendous increase in the rate of income tax, the result being that the net yield (on which, of course, life offices depend for the fulfilment of their obligations), did not increase at all for a time —in fact it fell slightly. Since the close of the war an improvement has occurred, and most offices, at the moment, are earning at least 4 per cent. net. The present outlook, however, is obscure. Gross rates show a distinct tendency to fall and it is difficult, at present, to see whence the compensating influence is to come.

The effect upon expenses became apparent gradually, but not the less surely. In the first place, the ordinary expenditure on books, paper and other materials rose, and secondly, the cost of salaries became much heavier owing to the grant of war bonuses based, to a great extent, on the cost of living. Moreover, it should be remembered that very large sums were paid by the offices generally to the dependants of members of their staffs who were away on active service. Concurrently, of course, provision had to be made for the remuneration of substitutes. The termination of the war, so far from witnessing the beginning of a fall in the expense ratio, seemed rather to usher in a period of still greater increase. The figures returned by the offices for

1920 and 1921 showed a very serious advance upon pre-war ratios, but, happily, there are now signs of some improvement. There is, of course, no immediate prospect of a return to the percentages which were found to be sufficient before the war.

The effect upon new business was immediate. Any tendency that might have developed in the direction of increased desire to assure, was checked at once by the heavy extra premiums which (as we have already noted) had to be imposed, and new policies on the lives of men under the age of 40 became very few in number. In the later stages of the war, some accession of business occurred in the shape of assurances by middle-aged men who had made money, and a considerable amount of interest was aroused by several offices in connection with the offer of new policies, payable either in War Loan or in National War Bonds.

With the demobilisation of the Army and Navy, in 1919, a very large increase in business was experienced. Offices generally reported figures far in excess of any previously reached and the pressure continued (although in a lessened degree) into 1920. The uncertainty of the financial situation and the depression in trade produced a marked decline in the latter part of that year, however, and, since then, returns have been much more moderate. They are still considerably higher (so far as amount is concerned) than they were before the war, but the increase by no means covers the decline in the purchasing power of money. We refer below to the change in the distribution of the new business between the participating and non-participating tables, which was engendered owing to the lack of bonuses.

The effect upon valuations has been evident chiefly in the use, by several of the offices which valued formerly at very low rates of interest, of a somewhat higher rate. Some provision was made by the Government for the purpose of meeting the exceptional difficulty of valuing securities in the early part of the war, but it is not necessary to go into the matter. Speaking generally, we may say that valuations were made at the accustomed dates on bases similar to those adopted before the war (apart from the point already mentioned). The absence of any failure among the life offices is an impressive testimony to their strength. Cautious building-up of reserves in past years, aided by the existence of a great mass of with-profit business, was the chief factor which kept the fabric from being shaken.

The effect upon bonuses was total as regards the great majority of offices. It is true that, in a very few cases, bonuses were allowed during the war on the usual scale, and that, in this way, the proud record of several of our leading companies was maintained. In fairness, however, to the majority of offices we must record the fact that in some instances (though not in all) the cost of the bonus was provided by the shareholders. The valuation results appearing during the years under review were very varied. Some companies had substantial surpluses which they deemed it advisable to carry forward ; others were less fortunate. Necessarily, the experiences of individual offices in respect of war mortality differed widely during the early phases of the struggle, since, in some cases, many policies had been issued on the lives of regular officers, while, in others, there were hardly any of such contracts.

As a natural consequence of the practical absence of bonuses, there was a distinct increase in the proportion of new business written under non-participating tables. Most companies felt this influence—some much more than others. In this connection, reference may be made to an interesting table appearing in the Annual Insurance Number of the *Statist* (July, 1922).

The marked change in the outlook for first-class securities, which has been in evidence during the current year, and the prospect of lower expenses, have altered the position materially. It is felt now, by many authorities, that the participating policy is coming again into its own, and that, in the absence of further world-shaking events, it should prove to be in the future, as it was in the past, the more attractive form of assurance.

Such were the chief effects of the war. We have seen that life assurance stood the many-sided test without a sign of collapse. The same cannot be said, unfortunately, of some other branches of the business. It is not our concern to touch upon them in this volume—we refer to the matter merely because, out of the troubles experienced by certain new companies in the reinsurance and marine insurance sections, there arose a demand for a modification of the Assurance Companies Act, 1909. A Bill was promoted by Mr. Stanley Holmes, in terms of which companies would be required to publish detailed particulars of their investments. It has not become law, and is regarded as being unnecessary in theory and impossible in practice. The reasons advanced against it are firstly, that, even if a complete list of the investments existing on the date of the balance sheet were published, there would be no guarantee (further than that which already exists) that they remained in the possession of the company afterwards. Secondly, it is clear that to require publication of the details of mortgages, etc., would hamper the business of assurance companies very greatly, and most unfairly, since other lenders and investors are not called upon to give particulars. The effective and abiding guarantee in respect of life and other forms of assurance in this country must continue in the future, as it has done in the past, to lie in the high character and the keen sense of responsibility of those who control the offices.

During the period under review Industrial Life Assurance attracted considerable public attention, first of all because of the Courts (Emergency Powers) Acts, which, while admirable in intention proved to be unfair in practice, since, as is well known, they involved the maintenance in force of large numbers of industrial policies without any effective provision for securing to the companies a proper allowance for the risk so run. Secondly, there was the investigation by the Parmoor Commission as a result of which the Government promoted a Bill to amend the law relating to industrial business. The Bill was not received favourably by the companies and societies concerned, and it did not pass into law during the session of 1921. It is understood, from announcements in the Press and in Parliament, that, during the current year, negotiations have been proceeding with a view to arriving at an agreed measure. Up to the time of writing, however, such a measure has not been presented to Parliament.

The work of the Institute of Actuaries, the Faculty of Actuaries in Scotland, the Insurance Institutes and other professional bodies, was hampered very greatly by the war and, in fact, much of it had to be suspended. Conditions are returning gradually to the pre-war basis. It will be remembered that, shortly before the war, a movement was on foot for the establishment of a Bureau of Actuarial Research, so that data might be analysed and results might be presented much more promptly than had been possible hitherto. With the return of more peaceful conditions, a practical commencement has been made in the shape of an investigation into the mortality (or, rather, the vitality) of annuitants. It is proposed not merely to deduce results for the past twenty years, but also to make a continuous analysis of accumulating data. The results of the experience now in hand are being awaited eagerly. It is believed that they will fortify the prevalent feeling that the mortality of nominees is declining. For the purpose of comparison, Mr. E. H. Lever's recently deduced results in respect of life-tenants will be available.

In another field, the research involved in connection with the Census demands brief mention. As a basis for rates for industrial assurances, these national enumerations of the general population, and the tables deduced from the returns, are of very great importance; and it is satisfactory to be able to record that permanent provision has been made in connection with the taking of the Census.

The complicated matters arising in respect of enemy subjects, income tax, recruiting, etc., etc., involved a very large amount of extra work on the part of the responsible officers of life assurance companies. Many of the problems were entirely novel and called for prompt solutions, in deducing which the existence of bodies like the *Life Offices' Association* and the *Associated Scottish Life Offices* was of the utmost advantage.

Despite all obstacles, life assurance has gone forward in these last ten years. Figures could be quoted to show the increase in sums assured, in premiums payable, in funds accumulated and so forth. They are printed for the information of the curious in publications such as the Annual Insurance Number of the *Statist* or of the *Stock Exchange Gazette*, the *Post Magazine Almanack*, etc. We have no space in which to reproduce them here, nor is it necessary that we should do so. We believe that, on due and honest thought, it will be agreed that the community at large has a keener interest in, and a truer appreciation of, the meaning and value of life assurance than it ever had before. If this be so, the future is secure.

NOTE.—It is not feasible to give a list of reading for this chapter. The following papers in the *Journal of the Chartered Insurance Institute* may be mentioned, however, as being well worthy of reading for their own sakes and as bearing, more or less directly, on the subjects discussed above:—

Life Saving as a Function of Life Assurance, E. L. Fisk.—Vol. xviii., p. 81. (1914.)

Development of Monthly Income Assurance, A. G. Ramsay.—Vol. xix., p. 89. (1916.)

Effects of the War on Life Policies, D. Paulin.—Vol. xxi., p. 1. (1917.)

Effect of the War on Life Assurance, H. Brown.—Vol. xxiv., p. 1. (1920.)

CHAPTER II.

FORMS OF LIFE ASSURANCE AND ANNUITY: POLICY CONDITIONS.

By R. C. Simmonds, F.I.A.

Note.—By permission, the portion of this chapter dealing with Disability Benefits has been adapted, somewhat freely, from an article contributed by the author to the Stock Exchange Gazette. Similarly, the section relating to Policy Conditions is (apart from the remarks upon non-forfeiture) reprinted, with but slight alterations, from another article written by the author for the same journal.

It is proposed in this chapter to consider, firstly, the different forms which contracts involving life contingencies may assume, and secondly, the general conditions which are commonly incorporated in the policies. Space being limited, the more usual classes will receive scarcely more than a passing notice (except for special features), but those modern developments such as children's policies, group insurances, partnership policies and disability benefits will be treated in some detail.

Ordinary Whole-Life Assurances.—Historians of life assurance record that the earliest policies were granted only for one year but this practice soon changed and the now familiar ordinary whole-life policy became the most usual form of contract. Such an assurance was and still is effected mainly with a view to providing for dependants after the death of the life assured, and, since premiums are payable so long as he may survive, the benefit is obtained at the lowest possible level annual cost. It soon appeared, however, that the policy had one great disadvantage since in many cases the holder was compelled to continue the payment of premiums long after he had retired from business and could find the necessary money only with great difficulty. This disadvantage was met to some extent in the case of participating policies by applying the periodical allotments of profits in permanent reduction of future premiums until such time as these latter were exhausted. In at least one case bonuses were applied, upon request, in limitation of the number of future premiums. The records of some offices, at any rate, show clearly that this process of progressive reduction or limitation was adopted far more freely 50 or 60 years ago than at the present time. It must be recognized, however, that the primary objection was not completely removed since bonuses might have failed at any time. Moreover, there were many policyholders who did not look forward sufficiently far and who failed, therefore, to appreciate the trouble which they would encounter in the declining years of life. This is no fanciful picture—those acquainted with the working of long-established life offices will recall cases in which old policyholders have been unable to pay premiums and have been obliged either to take reduced paid-up policies or else to borrow year after year. One or two offices contrived to avoid leaving the question to the foresight of the assured by making all policies subject to a fixed premium for the first few years with a much reduced premium thereafter, the reductions gradually growing until the premium was extinguished. It should be noted that all these reductions depended upon the earning of a sufficient amount of surplus. This type of contract attracted a small but select class of lives, as the present position of the London Life Association and the Metropolitan Life Assurance Society testifies, but it was open to the objection that the heavy premiums fell due in those years in which the average man finds it most difficult to save. Further, it was evident that the majority of the persons selecting participating contracts desired to receive increases of sums assured and not reductions of premiums. As regards with-profit policies, therefore, it must be concluded that the objections to the ordinary whole-life policy were not fully met by any of these expedients and the difficulty remained entirely unsolved in the case of non-participating contracts since all the remedies suggested involved the application of bonuses.

Whole-Life Limited Payment Assurances.—The solution is reached when we turn to the next type of policy, namely the limited payment whole-life assurance. In this case the benefit is payable on the death of the life assured just as before, but the maximum number of annual premiums chargeable is definitely fixed at the outset. Consequently, by selecting a suitable number the assured can protect himself absolutely against the risk of having to pay premiums when he is old. It is true, of course, that the annual cost is greater than in the case of an ordinary policy, but for the usual ages at entry the difference is but slight, provided the number of premiums be not very small. This point is frequently overlooked and it may be that offices unintentionally encourage the omission in that the tables which they publish rarely show premiums payable for more than 25 or 30 years. The young man assuring at, say, age 25 is deterred from taking out a 25 payment policy because he cannot face the much heavier cost and it does not occur to him, as a rule, that a 35 or 40 payment policy (which would involve very little more annual outlay than the ordinary contract) can be obtained upon request. As means of family protection, death-duty provision, etc., these assurances are not yet appreciated properly, but there can be no doubt as to their marked suitability for such purposes.

Endowment Assurances.—We come now to the most popular form of policy at the present time—the endowment assurance. As is well-known, this type of policy matures at the expiration of a term which is definitely fixed at the outset and it necessitates payment of premiums for a limited number of years.

Thus it meets the demand for a clear statement as to the maximum amount which the policyholder may be called upon in any event to pay and it also adds the very important benefit of a fixed date of maturity. Among the many useful purposes which such a policy serves, the following may be enumerated, not because they are at all ill-known but because, when set forth together, they suggest some rather important qualifications :—

(*a*) Provision for family or other dependants.

(*b*) Provision for old age.

(*c*) Investment.

(*d*) Education of children.

The first point to notice is that while *each* of the foregoing objects may be attained, or at least facilitated, by effecting and maintaining an endowment assurance, they cannot *all* be properly secured by one policy—at any rate in ordinary circumstances. The average man who desires to provide for his family must choose a long term policy since only in this way can the limited sum which he can afford to expend yearly in premiums be used to secure a reasonable capital amount. It is true that by effecting a policy to mature, say, at age 65, he can combine (*a*) and (*b*), but there the process must stop, for it will be found that a long term endowment assurance is not attractive as an investment. Indeed it cannot reasonably be selected for the purpose just mentioned since the element of assurance rather than that of accumulation is necessarily predominant. Similarly, such a contract is of little use as a provision for the education of children since the need arises early, presses heavily for a comparatively short period and then passes away. Conversely (*c*) and (*d*) may be combined but only at the expense of (*a*) and (*b*). We arrive thus at the second point which is that it is not sufficient to effect an endowment assurance and to hope that all its possible benefits will be secured—it is necessary to decide intelligently between the conflicting possibilities and to select a short term or a long term policy accordingly. In drawing these distinctions we do not forget that in certain circumstances, such as early death, a long term assurance will prove to have been even better as an investment (for others) than it was as a means of family provision ; we are concerned rather to emphasize that in a contract in which the elements of investment and protection may be coupled in various proportions, it is vital to choose that combination which appears likely best to suit the purpose in view. Further it may be borne in mind that, as regards a participating policy, the method of allotting profits might possibly modify the normal conclusions to some extent.

Sometimes a request arises for the issue of a limited payment endowment assurance, in which case premiums will cease some years before the policy matures. Such contracts, however, are seldom required and, in any event, they present no features of special interest.

Term Assurances.—The next form of policy to be considered is the temporary assurance in one or other of its varied guises. Whereas the endowment assurance, particularly in its shorter-term examples, contains a very strong element of investment, the temporary assurance contains none whatever—it is protection purely and simply. We may have, first of all, the simple form by which the policy money is paid only if the life assured die within a specified term, no payment or return being made otherwise and the contract becoming void immediately the stated period expires. Such policies are very common in relation to business transactions of various kinds. Merchants and others going abroad for a short trip, professional men desiring to protect themselves against the death of successors before the latter have paid for the practices which they have purchased, etc.—all these find in a term assurance the cover which they need. Policies of this kind are granted at small premiums and no surrender values are allowed. In view of the reasons which call them into existence, the contracts are arranged to run for short periods ranging from 3 months (or even less) up to 7, or possibly 10 years. There are exceptions of course, but it will be found, as a rule, that a term assurance granted for more than the number of years just mentioned contains some additional provisions.

It is not necessary that the sum assured should be a constant amount. Many business transactions involve the gradual liquidation of a liability, and consequently the assurances are required in such cases in respect only of the balance from time to time outstanding. Decreasing temporary assurances are granted in these circumstances, but not at level premiums, since if this course were followed, it might happen quite easily that the policy would be dropped after a year or two, in which case the office, after having given the maximum protection at an inadequate current premium, would lose the compensation which the later premiums provide. Such policies are arranged on the basis of decreasing annual payments, or of a single payment, and there is no further difficulty.

Of recent years there has been a marked development of a more complicated type of temporary assurance. This type appears under various titles—such as Reduced Early Premium Policy, Convertible-Term Policy, Temporary Policy with Option, etc. It has arisen to meet the needs (whether already existing or arising through continuous suggestion) of those who desire protection, but who either cannot afford, or, through uncertainty or indecision, do not wish, to pay the premium for an ordinary whole-life or endowment assurance. Whatever the particular title adopted the form of policy now under discussion is just an ordinary term assurance to which has been added an option benefit. It is desirable that at this point we should consider the meaning of this last expression. Briefly, it signifies that on certain conditions the office will allow the assured to select at a future date, some form of permanent policy and will grant such policy to him *without* requiring any evidence of his then state of health. Seeing that life assurances are granted only to those who satisfy the office as to their eligibility and that, as time goes on, lives fall into bad health, it is clear that such an option may be very valuable indeed to an individual and, at any rate, has a value at the outset in the average case. It is usual to charge a person who exercises his option the ordinary rate at the attained age for the particular type of permanent policy chosen: in a few cases a small reduction is made but this is rarely of great importance. Thus, the option benefit must cover the risk of the life assured's not being as good as a first-class new entrant when he elects to take up the permanent policy. In order to reduce the risk to reasonable proportions it has been customary hitherto to provide that the option shall cease 5 years before the temporary policy would expire if it were renewed for its full term. For example, a convertible term policy for 25 years would confer upon its holder the right of effecting another assurance at any time during the first 20 years. There is no doubt that in many cases the longer term policies, such as those for 25 or 30 years, form a very fine means of providing against the risk of death during the period in which family responsibilities are so heavy. It has to be remembered that, in general, such an assurance has no surrender or loan value, that it comes to an absolute end unless converted and that, necessarily, an office will be exceedingly careful before allowing a person to take up a policy in this comparatively cheap form.

Pure Endowments.—We may now refer to the exact converse of the temporary assurance, namely, the pure endowment. From a policy giving protection alone we pass to a contract which affords only accumulation. Moreover, the accumulation is not absolute, since the policy money under a pure endowment is payable only on survivance of the prescribed period. In the event of prior death the premiums may be returned, with or without interest, or they may be forfeited. If they be returnable the contract is not very different from a mere deposit arrangement and needs no further comment here, but if they be non-returnable an important point arises. First of all we may notice that the selection made by the office in the case of an ordinary life policy is not required. The worse the prospect of longevity, the better it is for the office, but there is another side to the question, since we cannot assume with safety that the person about to take out such a policy will be entirely ignorant of the point. It is reasonable rather to frame our rates on the basis that, as in the case of annuities, a distinctly superior type of life will be attracted. A life annuity is, in fact, nothing more than a series of non-returnable pure endowments with this difference that, whereas an annuitant can look forward to receiving a first payment from the office in a few months and a succession of payments at short intervals afterwards, the person effecting a pure endowment has a much longer period of waiting. He or she is likely therefore to be thoroughly satisfied about the prospect of survivance before effecting such a contract in its non-returnable form. An office granting these policies is said, in technical language, thus to be subject to strong self-selection on the part of its policyholders.

If we combine an ordinary term assurance with a non-returnable pure endowment we obtain the equivalent of an endowment assurance. The paramount importance of this last type of policy caused us to deal with it in an earlier part of this chapter, but it may be as well to point out here that the rates for endowment assurances are not derived in practice by such a process of combination. They are always less than the sum of the two separate premiums, partly because only one contract is required but chiefly because the application for the combined benefit shows the office that it is not necessary to guard itself so carefully against self-selection.

The pure endowment portion may be doubled or even trebled and in such a case we obtain either a double endowment or a treble endowment. The former contract is issued sometimes at the request of an applicant who is optimistic as to his chances of survivance and sometimes to a person who is not regarded as being quite a first-class life. It will be seen upon brief consideration that if the defect is such that it operates during the currency of the policy, it will increase the risk of death within the term and reduce the chance of survivance of the term. It is found that, *in some cases*, the use of a double endowment enables an office to accept a proposal at normal rates whereas an extra premium would be required for an ordinary endowment assurance.

Assurances on more than one life.—Hitherto we have considered assurances into which only one life enters. Now we may take up the cases in which two or more lives are concerned. The first contract of this type is the ordinary joint whole-life policy under which the sum assured is payable in full as soon as one of the lives dies. This is sometimes recommended as a suitable provision for partners in a business but, as will be seen later in this chapter, it is by no means completely satisfactory in that respect. Occasionally the contract is selected by a husband and a wife but otherwise there is no great demand for it. The only point of special interest in connection with it is that at any time the assured are usually allowed, without production of evidence of health, to convert the policy into two separate assurances, one on each life. The sum assured by each of the new policies is one-half of the original amount and the premiums are charged upon the basis of the respective ages at the date of effecting the joint life contract.

It is not necessary to limit the idea of a joint policy to an assurance for the whole term of life. Limited payment whole-life assurances, endowment assurances and temporary assurances are issued when desired.

Last Survivor Assurances.—Last survivor policies, as their name implies, are payable only when the death of the surviving life occurs. The premiums are naturally less than those for single-life assurances of the same amount. It may perhaps be worth while to point out that, when all the lives except the last survivor have died, the contract is not then equivalent to an ordinary life assurance upon the remaining life, because the original premium is still payable and is different from that which would have been required for a single-life policy.

Contingent Survivorship Assurances.—Both joint life and last survivor assurances are payable absolutely, sooner in the one case and later in the other: receipt of benefit is not in any way conditional upon the death of the two or more lives in any particular order. When we come to contingent survivorship assurances, however, we have to take account of this factor. The simplest case is that of a life A versus a life B. The policy provides that the sum assured shall be payable only if A predecease B, and from this it follows that the office requires to be satisfied that A is eligible for assurance but it does not need any such information as regards B. These policies are granted largely in connection with reversionary transactions and, as a rule, B is a comparatively old person whereas A is much younger, in which event the premiums are very small. There are, however, many other cases to consider. For example, we may have two lives (say, A and B) against one (say, C) and the two may have to be treated either as a "joint status" or as a "last survivor status." In the former event the sum assured is payable only if *either* A or B predecease C—in the latter instance it is payable only if *both* A and B die before C. Again, we may be required to deal with the case of A against B and C—here also B and C may be either a joint or a last survivor status. If the latter type be in question there is a point of some practical interest to consider, viz. that if the annual premiums be payable throughout the whole currency of the assurance (and not merely until the first death occurs) the early death of either B or C may make it possible for the assured to drop the policy and to effect a new one to cover the reduced risk at a cheaper premium. This could be done only if A were still in good health, and in many cases the saving would be so small as to render the possibility very remote, but the point is that, if the change were made, the office would be deprived of a part of its consideration for the risk run. In practice most of these policies are assigned in connection with loans on reversionary interests and it is hardly likely that the matter would be raised. Still, the chance exists and it must be considered in any case in which it appears likely to be applicable. A remedy, of course, is found quite simply by charging a higher premium, which either ceases absolutely or is reduced when the first death occurs.

Some contingent survivorship assurances are very complicated: thus we may have to deal with the case of a sum assured payable only if A die before C, but after B, and so on. Some risks again are purely nominal as, for example, the not uncommon instance in which the policymoney is receivable only if the last survivor of a family of 5 or 6 comparatively young persons should predecease an old lady in the eighties. In such a case the theoretical premium would be negligible, but expenses have to be considered, and therefore the rate is fixed more or less arbitrarily. A mere letter from the medical attendant of each of the lives to be assured is the most that would be required by way of evidence of health as a rule.

Closely connected with these nominal risks are those known as assurances against issue and "Name and Arms" assurances. These contracts are granted solely by way of indemnity in connection with reversionary or other financial transactions and are often the means of completing, from a strictly legal point of view, what is already practically an absolute title. Thus an issue policy may provide that the assured shall be indemnified to the extent of his loss, up to a specified maximum amount, if a person who is already married should have future issue by his present or any subsequent lawful wife. Clearly there are very severe practical limits to the number of cases in which such a policy could be issued, but, if the present wife be beyond the child-bearing ages and in good health, the risk can be covered for a reasonable premium always provided that the general circumstances of the case are quite satisfactory. Again a policy of indemnity can be granted against the risk that a nobleman may cease to use the name and to bear the arms of his present title. In all these cases it is axiomatic that the person in respect of whom the assurance is granted (*i.e.*, the husband in our first example and the nobleman in the second) shall not be able to obtain any pecuniary advantage by the occurrence of the contingency in question.

Annuities.—We may turn now to the brief consideration of the different types of annuity granted. Of these the first is the immediate single-life annuity which needs no explanation. The only points to be decided are (*a*) the frequency with which the periodical payments are to be made and (*b*) whether the annuity is to be apportionable or non-apportionable. (An apportionable annuity involves the payment of a final proportion calculated up to the date of death,—a non-apportionable annuity ceases with the periodical payment immediately preceding the date of death.) From this it is natural to pass to the annuity on two or more lives. Such a contract may continue in force either until the first death occurs or until all the nominees are dead. In practice the latter form of annuity is much more usual than the other type although it will often occur that persons desiring to buy a last survivor annuity will ask merely for a joint annuity. Seeing that there is a very great difference between the two cases it is important that everything should be made quite clear. Occasionally a request is received for an annuity payable in full so long as both of two lives survive but reducible by one-half (or some other proportion) on the first death. If the reduction be 50 per cent., the case resolves itself into the purchase of two separate single-life contracts, each for one-half of the full annuity.

Temporary life annuities are rare. They are payable, of course, only during the term of years originally fixed and they cease on the death of the nominee should that event occur before the period expires.

Deferred annuities are much more frequent as they form a favourite means of providing for old age. As a rule premiums are payable periodically during the period of deferment and it is arranged that, in the event of the death of the nominee before the annuity commences, premiums shall be either returnable or non-returnable. It is customary to allow a moderate rate of interest (often calculated on a " simple " basis) in the case of returnable premiums.

In many instances persons desirous of purchasing annuities hesitate to do so because they realize that, in the event of their early death, the price paid will be forfeited and only a small amount will have been received by way of periodical payments. Due allowance for this risk is made, of course, in the calculation of the rates offered, but, none the less, the fear of a bad bargain is often present and prompts the request for some provision which shall obviate, or at least minimize, the risk. Sometimes the enquirer will suggest a remedy by asking for concurrent quotations (*a*) for an ordinary annuity and (*b*) for a life assurance to secure the return of the whole of the capital when death occurs. seeing that the office has to allow for expenses and commission on each contract, it is obvious that such a combined transaction must show a very poor return and the proper course in such circumstances is, undoubtedly, to suggest that the money be invested in first-class securities. The risk in question is minimized in practice by the addition to an ordinary annuity of either of the following provisions—(*a*) it is laid down that the payments shall be made for a definite number of years, say 10, whether the nominee do or do not survive, or (*b*) it is agreed that if the nominee die before the total payments received are equal in amount to the purchase money paid, the balance shall be handed to his or her executors.

The only other form of annuity which calls for notice is the reversionary annuity which provides that, in the event of the death of one particular person during the lifetime of another specified person, the latter shall receive, as from the date of the former's decease, an annuity for the remainder of life. It is clear that, in theory, a contract of this kind affords a ready means whereby a husband can provide for his wife but, in practice, not many of these annuities are effected. In all probability this comparative rarity arises partly from the fact that, if the wife die first, no return is made by the company, partly from the fact that, even if the annuity be entered upon, it may cease very soon owing to the death of the widow (thus leaving children unprotected) and partly from the fact that the contract is not brought as a rule to the notice of prospective assurers. It is possible that with certain improvements the reversionary annuity might become more popular, as it has, at any rate, one advantage over an ordinary life policy in that a definite income is provided. Thus is removed the risk that the wife, through carelessness or inexperience, will lose the capital sum received under the life policy when her husband dies. We may point out that in the case of all annuities save those of the reversionary type, no evidence of health is required by the office. In this last instance, however, it is essential to know that the life at whose death the annuity will come into force (if the other person be then living) is in good health. Accordingly a medical examination is required.

Sinking Fund Policies.—Although they are not life policies, sinking fund contracts come frequently under the notice of actuaries and others connected with life assurance and so a few words with regard to them may be permitted. These cases, which are known also as Capital Redemption or Leasehold Redemption policies, involve no life contingency and provide simply for the payment of a definite sum at the end of a stated term of years. Sometimes the benefit is payable periodically for a fixed period and, in such cases, it forms an annuity-certain. The consideration may be either a single premium or a series of periodical premiums.

Children's Assurances.—Having now dealt briefly with the special points arising in connection with the older types of assurance we may turn to consider in some detail those modern developments to which reference was made at the outset. The first to be taken up is the subject of children's assurances. To prevent misconception, we must say at once that the term as used here does not include industrial assurances granted to cover funeral expenses within the limits allowed by legislation. We shall be concerned (*a*) with policies which are designed to provide for education and (*b*) with deferred assurances which come into full force when the child reaches a certain specified age. The field is very wide, but it is an important one, and it is necessary that the student of life assurance should have clearly in his mind the differences between the various forms of provision that are now being offered in such bewildering variety.

The first link in the chain of development as regards provision for education, etc., is the single endowment in terms of which a lump sum is payable on the attainment by the child of a specified age. In the event of previous death the premiums may be returnable (with or without interest) or they may not. There is no life assurance, whether of the child or of his father, in such a contract and its simplicity is its chief merit. Persons (*e.g.*, godparents) desirous of setting aside a lump sum to accumulate for the benefit of a child can effect one of these policies and pay a single premium, but even so the same result is usually attainable in a much more satisfactory manner as we shall see presently. An obvious extension of the single endowment has been made by providing that the sum assured shall be payable by a series of instalments (not necessarily of equal amount) the first of which falls due when the child reaches the specified age. This alteration, although it renders the benefit more suitable for educational purposes, does not meet the two radical difficulties which are (*a*) the effect upon the financial position of the average family of the premature death of the father and (*b*) the question of the rebate of income-tax. It is only too clear that in most cases the ability to keep up a policy of the kind described is very much restricted—if indeed it be not entirely removed—should the father die early. What is needed in those circumstances is not a policy which is still subject to the payment of premiums but an immediate benefit for the maintenance and education of the child. Further, a contract of the type under discussion does not rank for rebate of income-tax in respect of the premiums payable thereunder.

The second link in the chain is the policy known as the educational endowment with premiums dependent upon the survivance of the parent. The benefit in this case is precisely the same as in that of the first type of policy and the sum assured may be payable either in one sum or by a series of instalments.

The premiums, however, are slightly increased in consideration of the provision that, should the parent die, no further payments shall be required and the policy shall thus become fully paid. An office granting contracts of this class calls for some evidence as to the health of the parent, but very often a medical examination is not made, satisfactory answers to a series of questions in the proposal form being sufficient. Undoubtedly, such a policy is much better than the original endowment, but neither of the two objections already cited is removed. (*a*) is mitigated but (*b*) remains, since the Inland Revenue Authorities do not allow these contracts to rank for the rebate of income-tax.

The third link is the ordinary endowment assurance on the life of the parent. If a short term policy of this kind be effected, not only does the payment of premiums cease immediately the parent dies, but also the sum assured is available forthwith. There is no difficulty in arranging for a series of annual instalments in lieu of a lump sum, and in fact policies can be obtained in which the option of taking either is specifically included. The premium for such a contract is very little more than that for an educational endowment and, further, the maximum rebate of income-tax permitted under the present regulations is obtained. Consequently no parent in good health should find it necessary to choose the educational endowment rather than the endowment assurance on the point of saving in annual outlay.

In the cases which we have discussed it has been assumed, tacitly, that, if the sum assured be payable by instalments, the benefit takes the form of an annuity-certain. This being so, it follows that after the first payment of the sum assured has fallen due, the subsequent death of the parent or the child makes no difference as regards the future instalments. Some offices which issue educational assurances of the third type discussed provide, however, that should the parent die at any time before the last instalment has been paid the remaining instalments shall fall due at once. There is little difference between the two schemes in actual practice but the premiums are calculated by distinct methods. In the latter case the policy is not an ordinary endowment assurance payable by instalments, but a combination of a series of single endowment assurances subject to the payment of a limited number of premiums.

We pass now to the other great branch of the subject of children's policies, viz., to deferred assurances. If, as has been usual hitherto, parents take no steps to provide life policies for their children while the latter are still quite young, it does not follow by any means that when the children grow up they will secure the protection which almost everyone needs. Quite apart from the possible disinclination of the son or daughter in question to effect a policy, there may be financial reasons which make it impracticable to take up an assurance of adequate amount and, worst of all, it may not be possible (owing to impaired health) to secure acceptance from any good office. All these unfavourable contingencies are met by the deferred assurance. The policy is effected, without medical examination, during the infancy of the child and it provides that the sum assured shall be payable only if death occur after the attainment of a specified age (usually 21 or 25). If the assurance be on a participating basis, profits accrue as a rule in respect only of premiums paid after the full benefit has come into operation. There is, however, at least one office that allows bonuses during the period of deferment as well. Premiums remain at the same level throughout the currency of the contract and, seeing that for several years after its issue the office is not running any risk of having to pay the sum assured, a rapid accumulation occurs with the result that rates are very low. Thus, whereas the annual premium at age 21 for a participating whole-life policy will be about £2 per cent., the rate for a deferred assurance of the same class effected at birth will be less than 17*s.* 6*d.* per cent. If the child die before the assurance commences the premiums paid are refunded either with or without interest. From these particulars it is obvious that the conditions which may militate against a person's effecting a policy early in adult life are neutralized in advance. There is no difficulty in securing acceptance if the family history be reasonably good; no evidence of health is required in adult life; the premium is very low and remains so throughout and, moreover, the existence of a policy effected years before encourages a young man or a young woman, who has just attained to full responsibility, to maintain it in force and to form habits of thrift.

It is necessary to point out at this stage that, in its modern development, the deferred assurance confers other benefits. For example, there is one company which offers to grant loans to the parent on a favourable basis during the years in which educational expenses are heaviest. It is true, of course, that unless the loans be repaid by the parent, the benefit available when the child takes over the policy is mortgaged, but, none the less, the offer is of interest from our present point of view as showing that the deferred assurance can be adapted so as to meet, in some degree, the requirements usually covered by an educational policy. Again, by the payment of a slight extra annual sum ceasing, in any event, at the end of the period of deferment, the policy may be made to provide that premiums shall cease immediately upon the death of the parent should that event occur before the assurance commences. The normal premium for a deferred policy is payable in any case afterwards. In this way, the parent assures to his child the full benefits usually available at 21 or 25, and prevents the contract from throwing any charge on the family income after his death and before the life assured can take it over. And yet again, the parent who makes provision by effecting a deferred whole-life assurance is not thereby committing his child to the maintenance of a type of policy which subsequent experience may show to be unsuitable, since various options are available, without evidence of health, when the policy comes into full force. Of these options, the chief are :—

(*a*) To take a cash surrender value calculated on a very favourable basis.

(*b*) To alter the policy to an endowment assurance, either with the same premium and a reduced sum assured, or with the same sum assured and an increased premium.

(*c*) To make the policy fully paid for a reduced sum, either upon the original whole-life basis, or upon the endowment assurance plan.

(*d*) To limit the number of future premiums by increasing the annual payment, the sum assured being payable at death.

It is customary to endorse the options on the policy so that the parent may be aware of the choice available. It is provided in some cases that the option must be exercised by the parent just before the assurance commences while, in other instances, the question is left to the life assured. In this connection we should point out that most policies are drafted in such a manner as to make it clear that the assurance vests in, and becomes the absolute property of, the child immediately upon the expiry of the period of deferment. In discussing single endowments we suggested that the object which they usually served might be secured by other means and it should now be clear that a deferred whole-life assurance with options is better, since it always includes the right of taking a favourable surrender value just when the assurance is coming into full operation. By effecting a policy for an appropriate amount, the desired cash sum may be secured if it should be required and other valuable options will be available.

Deferred endowment assurances are granted occasionally, but it would be better for parents to take out a correspondingly larger deferred whole-life policy at the same premium. The latter might prove very valuable in the course of time and, at any rate, it could be converted without trouble into the desired endowment assurance should such a policy be required.

There is only one other point to notice. Occasionally parents find it convenient to discharge the whole of the premiums during the term of deferment and so they hand on a fully paid policy. Such a contract would be very useful for purposes of security or for inclusion in a settlement.

Group Insurances.—We come now to a very recent development of the practice of life assurance, viz., the group method.

Employers of labour in many cases desire to make some provision whereby the dependants of any of their workmen who may die while in the service shall receive some financial assistance. Not only so but they are prepared also to set aside sums of money for the purpose of pensioning employees who become too old to continue at work. These needs are met in theory by means either of an endowment assurance or of a double endowment, and where the employers are both wealthy and generous and the service is stable—that is to say where the great majority of the employees will remain with the firm throughout the whole of their working life—no particular difficulty arises in practice. It is otherwise, however, in ordinary cases. The employer cannot afford to pay the relatively large premiums which an endowment assurance involves, he knows that the average period spent in his service is not a long one and yet he wants to do something in the direction of provision. Such is the problem and group insurance has been evolved as a possible solution.

In its simplest form a group insurance is a contract which remains in force for one year and which provides that a certain sum shall be paid in respect of each one out of the body of employees concerned who may die within the period and while still in the service ; it is, in fact, a collective temporary assurance. The amount assured in each individual case may be the same or else it may be based upon a definite scale. For example, one year's wages might be selected—or £100 plus £10 more for each complete year of service in excess of 10 with a maximum of £200. The essential point is that the sum must not be in any way dependent upon the state of health or the personal choice of the individual workman concerned. Again, if the group of lives be sufficiently large (say 100 or over) the policy is issued without requiring any evidence of health provided always that no person be given the option of coming in or of remaining out. The fact that the lives are all engaged in the active service of the firm is sufficient evidence of general health so long as all are taken in one group. If, however, any choice were given the matter would be entirely different. From these particulars it will be evident (*a*) that so long as the average age of the employees is low, the premium will not be heavy and (*b*) that a scheme of this kind can be worked at a considerably lower cost than could one involving the issue (after medical examination) of individual policies. On account of (*a*) group insurance tends to appeal to employers, and on account of (*b*) it appears as though it might be attractive to assurance companies. None the less, there are many points of detail to be considered before we can hope to arrive at a proper conclusion and we shall proceed now to take them up. In the first place, if the number of employees be less than the minimum of 100 above mentioned, a group insurance can be issued provided that some evidence as to health be given. A simple declaration from each employee and an examination of doubtful cases would meet the difficulty. Secondly, if there be any persons in the service who are over the age of, say, 65, special attention should be given to them and probably it would be advisable to call for evidence of eligibility. Thirdly, there is the problem of employees who leave the service during the year. The policy being simply a term assurance, there is no surrender value, and since, for various reasons (one being the fact that, usually, the employer *qua* employer has paid the premium) it is not desirable that the retiring employee should be included after he has left the firm, a position of some difficulty arises. It may well happen, for example, that the workman concerned has withdrawn because of a breakdown in health. Is he therefore to lose the cover when it is needed most? The suggestion usually put forward in order to meet this point is that an employee leaving the service shall be allowed to take, without producing any evidence of health, an ordinary whole-life or endowment assurance subject of course to payment of the appropriate premium. Seeing that in most cases he would not be able to afford the premium, the chance of the exercise of the option (at any rate in cases of breakdown) is very small. Undoubtedly this difficulty is one which is inherent in the ordinary group insurance. Fourthly, there is the question of new employees. It is conceivable that bad lives might seek to enter the service for the sake of the assurance, and for this and other reasons, it is usual to prescribe a probationary period of from 3 to 6 months. At the expiration of this period admission is automatic. Fifthly, it is evident that, in the case of a very large staff, the notification of each withdrawal or admission as it occurred would involve continual trouble. Therefore it is usual to provide that the firm shall keep proper records so that the premium may be adjusted at the close of the year in accordance with the actual facts.

Such are the main features of this recent development; we have now to discuss its advantages and defects. As to the former it is claimed (*a*) that group insurance by affording some tangible evidence of the employer's interest in the welfare of his staff tends to promote good feeling and continuity of service, (*b*) that it is not an expensive contract, (*c*) that it provides a certain sum in case of death while in the employment of the firm, quite irrespectively of whether or not the workman is of a thrifty disposition. On the other hand it must be recognised (*a*) that the cover given is purely temporary and that there is no effective provision for the case of workmen who leave the service, (*b*) that the employer may drop the policy at the end of any year—in which case no further benefit will accrue to the employees, notwithstanding that some of them may have been with the firm for a long period and may then be unable to make any provision themselves, and (*c*) that the true nature of the contract may be misunderstood by the lives concerned who may be lulled thereby into a false sense of security.

It is true that, as a rule, a certificate is given to each employee setting forth the conditions pertaining to the policy, but there is a real danger that in many cases the possession of the unread scrap of paper may encourage the idea that an ordinary insurance is in force.

It is obvious that, as the policy is effected only for a term of one year, the premium to be charged on renewal for a further period must be greater unless the constitution of the body of lives assured has undergone a change. If we suppose for a moment that the same lives are covered year by year for, say, 20 years, we shall see that the premiums payable in the latter portion of the total period will be very much heavier than the earlier premiums and moreover they will increase still more rapidly as time goes on. Ultimately, of course, the sum required in such circumstances to renew the policy would become impossibly large. The only force that will avail to prevent this difficulty from arising is the effect of the withdrawal of old lives and their replacement by young ones. In practice (with a large staff) this equilibrium may possibly be secured—at any rate approximately. Hence some companies are willing, in suitable cases, to guarantee to renew a group insurance year by year for a term of seven—or even more—years at a premium not in excess of an agreed rate. While this is so, the fact that the average charge is kept down to a reasonable level only by the progressive elimination of the older lives throws a very strong light on one of the defects of the system, for it means that these older persons are passing out of employment without there being any further benefit whatsoever to come from the insurance. The difficulty is mitigated to some extent if a group insurance be combined with a pension scheme. In such a case the lapse of the one benefit occurs when the other benefit comes into force. Seeing that the great defect of many otherwise admirable pension schemes is the poor provision made in the event of death in the earlier years of service it has been suggested that group insurance might be employed, as indicated above, to supply the need. We are inclined to think, however, that the desired object can be attained better by effecting either endowment assurances or double endowments.

When all is said it has to be remembered that the particular circumstances of each firm are likely to reflect themselves in the experience of a group insurance. It is not sufficient merely to charge a premium which covers the theoretical risk on the basis of general rates of mortality plus the necessary allowance for expenses and margin. The occupations have to be considered, as well as such matters as sanitation, lighting, heating, fire and accident prevention, class of worker, etc. In fact, the points which call for investigation are generally similar to those arising in connection with a proposal for a workmen's compensation insurance.

Partnership Policies.—The next subject which claims attention is that of partnership policies. When several persons are associated in the joint conduct of an enterprise and one of them dies very important questions arise. The survivors are usually placed in the position of having to provide, in one form or another, the capital of the deceased partner, while his representatives are anxious to secure a safe and satisfactory income for the widow or other dependants. It is true that, in theory at any rate, the terms of partnership might lay down that the survivors should take the whole of the assets of the firm without any payment. Such an arrangement, although it might be strictly equitable in certain initial circumstances, would not remain so for long and is open to such obvious practical objections that we need not discuss it at length. The three possible methods of procedure when the contingency of death occurs are as undermentioned :—

(*a*) The surviving partners may be bound to make a periodical allowance during a specified term of years.

(*b*) They may be bound to pay, during their lifetime, an annuity to the deceased's widow or other dependants.

(*c*) They may be bound to purchase the deceased's interest by a cash payment.

Each of the first two methods involves very serious difficulties and dangers which have been explained fully by Mr. Wansbrough in his pamphlet on "*The Case for Partnership Assurance.*" The surviving partners are handicapped by the continual drain upon their resources which payment of the allowance involves and, if the latter has been made to depend upon the profitsof the business, they may see a proportion of the extra return arising from their own energy and ability being paid away to others who have had no part in creating it. Moreover, in the not uncommon case of the association of a relatively wealthy partner with a specially experienced partner, the death of either is a very serious matter for the one left. Either the able man will find his efforts hampered in every direction by lack of means, or the partner who contributed most of the capital will be in difficulties owing to the loss of the real force behind the business.

All these considerations have a very intimate reaction upon the interests of the representatives of the deceased partner. They are made dependent upon the energy, ability and goodwill of the survivors and it is easy to see that they run a serious risk of loss.

Consequently we are bound to conclude that it is, in Mr. Wansbrough's words, "imperative for a partner, in the interests of his dependants, to insist that the capital of the first deceased shall be fully paid out of the business *immediately* at his death."

This course, however, may prove to be very inconvenient unless the need has been met in anticipation. Failing such a wise provision the means of procedure are :—

(*a*) to take the money out of the business.
(*b*) to borrow it.
(*c*) to secure a new partner whose capital will replace that withdrawn.

All are open to grave objection. A business which is being conducted with reasonable enterprise cannot be expected to yield at any moment a sum *in cash* amounting to a substantial proportion (possibly one-half or even more) of its capital. Borrowing is expensive and, almost certainly, will involve effecting a life policy—this at a time when the proposer may not be eligible for assurance except on very onerous terms. The third method may well prove to be the worst of all. Even if an apparently suitable new partner can be found when he is required it will be a hazardous and probably an expensive experiment.

In thus briefly mentioning the difficulties which, as we have said, Mr. Wansbrough explains more fully, we do not suggest for a moment that there will not be cases in which the surviving partners will be able and willing to provide all that is required. Our point is that there must be very many instances in which some or all of the difficulties will be encountered and that prudent persons should recognize the advisability of making due provision in advance.

Seeing that the need for the money will arise on the death of a partner it is obvious that some form of life assurance should suffice to meet it. We have now to consider the possibilities in this direction and in doing so it is important that we should recognize the fact that many partnerships terminate for reasons other than death.

Accordingly the policy or policies to be effected should be adaptable to these circumstances as well as suitable for the primary purpose of assuring a sum to be paid to the representative of a deceased partner.

The suggestion often made, viz., that a joint-life assurance should be effected is not by any means completely satisfactory for the following reasons :—

(*a*) It is not useful afterwards if the partnership be dissolved otherwise than by death.
(*b*) It does not give any cover in the case of the survivor.
(*c*) It is unsuitable to a case in which there are more than two partners.
(*d*) It is not adapted to partnerships in which the capital has been provided in unequal proportions.

Objections (*a*) and (*b*) are met to some extent by the option which is usually allowed of dividing a joint policy into two equal portions each on the life of one of the two persons assured, the new policies being granted without production of evidence of good health and being subject to the tabular premiums respectively applicable to the original ages at entry. Despite this option (which is given without extra charge) it is sometimes desired that a particular partner shall have a somewhat larger individual policy, and, to meet this point, there is a scheme whereby two new assurances each for three-fourths of the original sum can be obtained. When, however, all the objections are considered it becomes clear that a joint policy will be quite satisfactory only in exceptional cases. In most instances what is required is a separate assurance on the life of each partner. On this basis the sum assured can be varied according to the provision required on the death of the partner concerned, the problem of further protection, if required, is simplified and, if the firm be dissolved, each member can receive his own policy without any difficulty. The total premiums for ordinary whole-life policies of this kind are, necessarily, heavy and it may be that the resources available will not be sufficient to enable assurances of a sufficient amount to be effected. If this be the case the convertible term policy (which has been mentioned earlier in this chapter) offers an efficient substitute. If taken out for a term of, say, 25 years, ample protection is obtained at a relatively low cost and (save during the last 5 years of its possible currency) the assurance is convertible, without medical examination, into an ordinary policy subject to payment of the premium for the age attained. Policies of this kind carry no surrender-value but they certainly offer a valuable measure of protection for partnership purposes.

There is one more point of great importance to be considered, *i.e.*, the apportionment of the premiums payable in respect of the policies. Assuming that the partners have effected individual whole-life or convertible term assurances, in what way should the premiums be divided? In his pamphlet to which we have already referred, Mr. Wansbrough discusses the question at length and arrives at conclusions the gist of which we reproduce here. First of all the premiums should be payable partly by the partners personally and partly by the firm. Secondly the respective portions paid should be determined as follows :—

> The business has one value as a going concern and another (probably a much smaller) value in the event of a forced sale. The difference between these two values may be termed, for the moment, depreciation. Now it would be neither just nor practicable to compel surviving partners to buy up the share of a deceased member at more than an outsider would have to pay. Accordingly the interest to

be covered in such circumstances may be considered as being the sum of two separate items (*a*) the deceased partner's share on the basis of a forced sale, (*b*) the depreciation arising through such presumed sale.

Mr. Wansbrough considers that every partner should pay the premium for an assurance on the life of each of the others of amount sufficient to meet the cost of buying a pre-arranged portion of (*a*) and that the firm should pay the balance, debiting it, of course, to each partner's account according to his interest in the business.

The reasons for these conclusions are too lengthy to be given in the space at our disposal and we must leave the subject with the final remark that under the arrangement proposed any partner who refuses to maintain his share of the premiums injures only his own interests.

Disability Benefits.—Of late years there has been a marked development, chiefly in America, of assurance with an additional benefit commonly called the Disability Benefit. The ordinary life policy suffers from one serious defect in that a permanent and total breakdown of health may occur with failure of income and consequent inability to pay the premiums as they fall due. In many cases, of course, permanent breakdown is followed after a comparatively short interval by death and the difficulty does not arise in a very acute form, since non-forfeiture provisions, loan values, etc., are available to cover the period. In other instances, however, life may be prolonged for years and, if the assurance has been effected only recently, the privileges just mentioned will not be of much assistance. To meet this grave possibility the disability benefit has been introduced and already four successive types may be distinguished :—

(*a*) A simple "waiver of premium" benefit.

(*b*) A "waiver of premium" benefit coupled with a provision whereby a series of instalments on account of the sum assured commences to be payable on proof of disability or soon afterwards.

(*c*) A "waiver of premium" benefit coupled with an "income" benefit—the sum assured being payable in full eventually.

(*d*) An "immediate maturity" benefit.

As a rule these benefits are allowed only in case of total and permanent disability involving complete incapacity to earn an income, so that disability which is total but temporary or disability which is permanent but partial will not be covered. A limitation of this kind is not necessary in theory, but, in practice, it has probably a beneficial effect on the whole since it reduces the cost of the disability benefit to a sum which is well within the reach of the majority of holders of life policies: moreover, the most serious peril is covered. We may note in passing that there are a few schemes in which waiver of premium is allowed in respect of total disablement, whether temporary or permanent, but generally a benefit of this kind ceases on the attainment of a given age. In at least one case an income benefit is added but this, too, ceases when the waiver of premium benefit runs out.

In the case of the schemes which we are about to discuss the benefits *if once entered upon* do not determine when the assured reaches a certain age. While this is so, it is essential to remember that the total and permanent disability must arise before a given age if a claim is to be admissible. Various limiting ages have been tried and it is now a settled practice to employ age 60. The Disability Benefit is accordingly limited to cases in which breakdown occurs before that age but the benefit itself, if already payable, goes on throughout the currency of the policy. The extra premium charged ceases at age 60.

The four types of benefit set out above call for brief consideration. The first is a mere waiver of premium and its chief defect is its simplicity. When total and permanent incapacity occurs the cessation of premiums is an advantage, but it is not enough, since income fails and something is required to take its place. Hence arises the second type in which instalments of sum assured are payable over a period of say, 10 or 20 years. Should the assured live beyond the term for which these payments run no further benefit is available, either by way of income, or in the shape of a cash payment at his eventual death. While the great majority of persons afflicted with total and permanent disablement will die before the instalments have been paid (especially if the number be 20) there will be cases in which the policyholder outlives the period. In that event his income from the policy will cease and, moreover, there will be nothing left for his dependants. It is evident therefore that, although this second type is much better than the first, it is not by any means free from serious defect—a defect too, which can be removed easily and cheaply since the needed extension of benefit will arise only in a minority of cases.

The third type meets the objection just outlined. Sometimes it is applied only haltingly as it were—that is to say, the number of annual payments is limited but the ultimate disbursement of the sum assured is not affected. More often, the "income benefit" takes the form of an annuity for life and the original sum assured is payable at the end.

The fourth type involves the payment of the policy money and the virtual termination of the contract as soon as one of two events (*a*) and (*b*) in the case of a whole-life assurance—or one of three events (*a*), (*b*) and (*c*) in the case of an endowment assurance—happens. These events are (*a*) the death of the life assured, (*b*) his becoming totally and permanently disabled and (*c*) the expiry of the original term of the policy. The payment of the sum assured may take the form of a series of instalments, but, in calculating the amount of them, interest is added for deferment so that the equivalent of the full lump sum is given.

In the practical working of this business it is necessary, of course, to lay down certain qualifications, etc., which will be made clear by the following statements :—

(*a*) *Minimum period :* Disability must exist for at least 60 (or even 90) days before a claim can be admitted.

(*b*) *Payment of premiums :* All premiums due up to the end of the policy year in which proof is lodged must be paid.

(*c*) *Continuance of waiver benefit :* Premiums falling due after admission of the claim are waived so long as disability continues. (*Note.*—It may seem strange at first sight to read such a provision in connection with a benefit which arises only in respect of *permanent* disability. A moment's reflection will show, however, that the admission of a claim is, and can only be, based upon a presumption of permanence. Recoveries do occur in practice as noted below.)

(*d*) *Admitted causes of claim :* Irrecoverable loss of the sight of both eyes, loss of both hands by severance above the wrists, loss of both feet by severance above the ankles, loss of one hand and one foot are admitted as total and permanent disability. As regards diseases, much depends upon circumstances. A liberal interpretation has been put upon the contract by the best American companies and, in some instances, continuous total disablement for 3 months is presumed to be permanent without further evidence. Again, the admission of a tuberculous patient to a sanatorium would be sufficient for several offices, notwithstanding the possibility of ultimate recovery.

(*e*) *Proof of claim :* In other cases due evidence is required and, generally, the companies reserve the right to call for proof of continued disablement at any subsequent date, not more often, however, than once a year.

(*f*) *Discontinuance of the benefit :* At any time, the assured may ask to have the disability provision removed from his policy with a consequent reduction in future premiums.

(*g*) *Causes of disqualification :* Engagement in active naval or military service or in any form of aeronautics renders the provision void.

(*h*) *Recovery of health :* Premiums re-commence in such an eventuality and, if the benefit be of the second type, the policy is restored to the extent of the amount unpaid. If the benefit be of the third type, premiums re-commence and the monthly income ceases.

The cost of a benefit of one of the various types outlined cannot be stated very definitely—partly because of the short time during which the business has been in force and partly because the practice of offices as regards claims has varied widely. In addition, we must remember that the experience of one country may be very different from that of another. Subject to these points the student may note the following specimen extra premiums which are in general use in Canada. We have taken them from an exceedingly useful book entitled "Canadian Life Policy Conditions," published in Canada by Messrs. Stone and Cox. The amounts quoted are payable in addition to the ordinary premiums and are removed at age 60 in any event.

(1) Benefit of the second type, *i.e.*, waiver of premiums plus payment of instalments of sum assured.

Age at entry.	Extra annual premium per 1,000 for all ordinary classes of assurance.
20	·25
30	·25
40	·45
50	1·10

(2) Benefit of the third type, *i.e.*, waiver of premiums plus monthly income benefit of 1 per cent. of the sum assured—this last to be payable in full ultimately.

Age at entry.	Extra annual premium per 1,000.			
	Ordinary whole-life assurance.	Whole-life assurance, 20 payments.	Endowment assurance, 15 years.	Endowment assurance, 25 years.
20	1·10	1·50	·45	·55
30	1·55	1·80	·65	·90
40	2·20	2·20	1·15	1·90
50	3·60	3·60	3·00	3·50

NOTE:—The additional cost of a mere waiver of premium benefit is so small as to be negligible in most cases. Such a benefit is often given without extra charge.

The chief causes of claim hitherto have been tuberculosis, insanity, paralysis and accident. It is essential in selecting lives that the actuary should take particular care in cases wherein the family or the personal history shows a predisposition to any of these diseases or an extra liability to accident.

With a view to the control of any tendency towards adverse selection on the part of doubtful lives it is considered advisable to make the disability provision a regular feature of the contract of life assurance—in other words, persons who do not wish to take the extra benefit must ask to have it eliminated.

Before leaving the subject of forms of life assurance we may refer to two or three final points.

Special Schemes.—Many offices publish special schemes under attractive titles but it will be found that all such policies are combinations of two or more of the common forms which we have discussed. It is an extremely useful practical exercise to analyze schemes of this kind into their component parts.

Reassurances.—Although a reassurance, *i.e.* a passing-on of a portion of a risk from one office to another, is not a distinct form of life assurance, there are some points which may be mentioned here with advantage. If the original contract be on a participating basis, the ceding office gives off a share of the case, as a rule at its own rate and subject to its own conditions. If, however, the original policy be without profits the principal office may offer a reassurance at the premium of the guaranteeing office. In such a case, the conditions of the latter with regard to surrender value, etc., will hold good.

Industrial Assurances.—It is not necessary to refer separately, at any length, to industrial assurances for the purposes of this chapter. The policies issued are the same in type as those already mentioned with the addition of small assurances on the lives of infants. Such policies are limited in amount by law and are effected at, say, weekly premiums primarily to cover burial expenses. Apart from this special feature the industrial offices issue assurances of all the usual classes although, of course, the amounts and the arrangements for collecting premiums, etc., differ widely from those in force in ordinary companies.

POLICY CONDITIONS.

We take up now the other section of this chapter and consider the subject of policy conditions.

There is considerable reason to suppose that persons intending to assure their lives are becoming more and more careful to compare the propositions put before them on behalf of the various offices. The pressure of competition is leading the companies to assist in this progressive enlightenment and thus the time is approaching rapidly when by far the greater proportion of new business will be obtained only after the proposers concerned have investigated alternative offers. This tendency is to be welcomed, because it must promote the best interests of life assurance, provided always that the comparisons be made with due regard to all the circumstances. Seeing, however, that a true comparison of any two offices is a matter demanding considerable knowledge of somewhat intricate questions, it is probable that in many instances only the obvious factors are taken into account, with the result that the more advantageous choice is not made.

As a rule, the points which attract attention are the rates of premium and (if a participating policy be desired) the probable future bonuses. In other days it was reasonable, perhaps, to expect that, as between two well-established offices, a comparison of the two points mentioned would yield fairly reliable results. Owing to the war, however, the whole question of future bonuses has become obscure, and it is virtually impossible for a person not possessed of technical knowledge to arrive at a just conclusion. The remaining point—that of relative premiums—is utterly insufficient as a test. Such being the case, it is advisable to consider whether there are not other factors which may be taken into account with advantage.

It is proposed accordingly to discuss the subject of policy conditions. Of them two things may be said without hesitation—they are vitally important and they are frequently overlooked.

Policy conditions may be divided into the following categories :—

(A) Conditions with regard to payment of premiums, lapse, reinstatement, non-forfeiture, etc.
(B) Conditions with regard to claim, surrender, conversion into a paid-up policy, deposit as security for a loan, etc.
(C) Conditions with regard to occupation, residence and travel.
(D) Miscellaneous conditions.

Under heading (A) are included such matters as days of grace, deferment of premiums, revival of a lapsed policy and rights available if payment of premiums should be impossible.

With regard to days of grace it is of interest to note that, while there is virtual uniformity among the British offices in allowing 30 days for payment, some American companies adopt a different plan and charge interest from the actual date on which the premium falls due.

Deferment of premiums and revival of a lapsed policy are subjects in respect of which there are marked divergences of practice. In general it may be said that the policyholder who is unable to pay a premium is allowed to renew the assurance within a year, on payment either of a fine or of interest at a moderate rate. It is important to observe, however, that in some cases evidence of good health is required. This point may seem to be of scant consequence at the time of proposing for assurance (when, presumably, the applicant is in full vigour), but after some years it may become of the greatest moment, and may even make all the difference between securing the full benefit of the original policy and obtaining only a modified amount under, say, a non-forfeiture regulation. It is well, therefore, closely to scrutinize the reinstatement regulations before lodging a proposal.

The subject of non-forfeiture regulations is rather complicated. As a rule, the regulation comes into operation only at the end of the days of grace and it may take any one of the following four general forms—(*a*), (*b*), (*c*) and (*d*) :—

(*a*) The surrender value at the date of lapsing (after deduction of any loan, etc., due to the office) may be held at the disposal of the policyholder for a term of years. In this case the assurance is limited to the amount of the free surrender value and the position is very similar to that which would arise if the sum in question were placed on deposit without interest.

(*b*) The net surrender value may be applied at once to buy a paid-up policy. In this case some measure of assurance is given, but it is usually comparatively small. Some offices which adopt this arrangement, will allow the policy to be put into force again for the full amount, provided the matter be completed within a year from the date of lapsing.

(*c*) The net surrender value is applied to keep the policy in force either (1) for a year, at the end of which period the balance remaining is used to buy a paid-up policy, or (2) for so long as such surrender value will last.

In case (*c*.1) the amount of the paid-up policy is often very small, and sometimes a minimum is fixed. In some instances it is laid down that the paid-up policy shall not be granted unless the policyholder make application accordingly.

In case (*c*.2) assurance is given for the policy money, less accumulated overdue premiums, loan, etc., and there is a surrender value so long as the non-forfeiture period lasts. In theory, this course amounts to the automatic advance of premiums, etc., as they fall due, and allowance should be made accordingly in the calculation of surrender value. If applied in this form, however, the method gives rise to troublesome calculations and, in some cases at least, the non-forfeiture period is obtained merely by dividing the net surrender value at lapsing by the amount of the annual premium payable—the surrender value allowable at any time during the period being merely the unabsorbed balance of the original value. Even then difficulties arise in certain cases, such as those of endowment assurances which are due to mature within a comparatively short period, policies subject to a limited number of premiums, etc., owing to the fact that the non-forfeiture period so calculated is longer than the term over which the future premiums are payable. Modifications have therefore to be made in applying the method in practice. A further point to note is that the non-forfeiture period may possibly run beyond the point at which the accumulated overdue premiums, etc., would exceed the sum assured and bonuses attaching at the date of lapsing. In such a case the point just mentioned would form the practical limit of the non-forfeiture period and, in order to avoid awkwardness, it is important to see that a longer term be not quoted.

(*d*) The net surrender value may be applied once and for all to purchase a temporary assurance of the full sum assured. This course, which is extensively applied in America, gives the maximum amount of cover for a limited period.

Coming now to heading (B) it may be said that usually the policy money becomes payable immediately on proof of claim and title. In a few cases interest is allowed in respect of the period elapsing between the occurrence of the claim and its settlement.

With regard to surrender values it is necessary first of all to ascertain what are the regulations of the office under review and whether the figures put forward in illustration of those regulations are or are not guaranteed. In the case of several companies the scale of surrender values which will be allowed is actually endorsed upon the policy, and forms part of the contract. In other cases a definite promise is made in the prospectus, and such promise amounts to an effective, if somewhat informal, guarantee. It will be recognized that, in order to make a table of surrender values of real use to the average policyholder, the particulars endorsed upon the policy must be very clear, very simple, and, as far as possible, definitely related to the class, amount and individual conditions of his policy. While it is quite easy to print on policies, either the basis on which surrender values are calculated, or else a representative scale of such values, it is not so simple—in fact, it is decidedly troublesome—to fulfil the conditions just enunciated. Accordingly some leading offices are reluctant to adopt the practice of endorsing surrender values. As a rule, however, there is no difficulty in obtaining such an endorsement in a particular case if circumstances render it desirable. In all probability the practice will spread gradually but only in a modified degree, *i.e.* the endorsement will be, to some extent, general, and the information given will require some slight effort of adaptation on the part of the policyholder.

While it is not necessary for the present purpose to consider in detail the question of the adequacy of surrender values, two or three general statements may be made: (*a*) that it is not the fundamental business of life assurance to provide attractive investments for very short terms; (*b*) that allowance must be made for the cost of the cover given and (*c*) that expenses usually press much more heavily on the early premiums than on the later ones. Consequently a policyholder should not be surprised to find that during the early years the surrender value is a comparatively small proportion of the actual premiums paid. Reference is made to this subject in Chapter vi.

There are wide divergences between offices both as regards the amounts allowed upon surrender and the conditions under which such sums are given. The differences of amount become obvious immediately a comparison is made, although, even so, some regard should be paid to the relative premiums. Other points are more likely to be overlooked—for example, the minimum period which must elapse before a surrender value is given, the allowance (or not) of a share in the surplus accrued since the last division, and so forth.

A paid-up policy represents the reversionary equivalent of a surrender value, and is often a very desirable benefit. In the case of policies under which the maximum number of premiums payable is definitely fixed at the outset (*e.g.*, endowment assurances, limited payment whole-life assurances, etc.), it is found practicable to give a proportionate paid-up policy. Thus, if 6 premiums out of 30 have been paid in respect of an assurance for £1,000, the paid-up policy would secure one-fifth of £1,000, or £200. If the original policy be entitled to participate in profits, it is important to ascertain whether the bonuses attaching before the alteration remain in full or whether they are correspondingly reduced. Further, it is desirable to enquire whether or not the paid-up policy will participate in future profits. Both of these points are of consequence to a policyholder, and there is a great lack of uniformity with regard to them.

In connection with the deposit of a life policy as security for a loan there are a few matters to notice. As a rule, offices are willing to advance nearly the whole of the cash surrender value without any formality other than the completion of a form of mortgage by the policyholder, and without any charge other than the cost of stamping the deed. The rate of interest is fixed in accordance with the financial conditions prevailing when the advance is made. In some cases the rate is unalterable, while in others it depends upon the Bank Rate. Speaking generally, the office has no power to call in the loan until a claim occurs under the policy. Having regard to all these features it is not surprising that a very large sum of money has been invested by life offices in this direction with complete security to themselves and very great advantage to their policyholders.

The third group (c) of policy conditions relates to occupation, residence and travel. Before the war it was customary in several offices to grant an absolutely unrestricted policy to any proposer who lived in a healthy climate and was engaged in a settled and non-hazardous occupation. Many companies, however, continued to insert restrictive clauses. When the war broke out an exceedingly heavy burden was cast automatically upon the offices which had made it their practice to dispense with such clauses, while those companies which were legally entitled to demand extra premiums for the special risks arising fell into line and voluntarily waived their rights. During the war new policies were issued only subject to restrictions, but since the armistice there has been a gradual return to previous practice, and doubtless the exigencies of competition will cause a progressive removal of such clauses on the part of offices which are still inclined to retain them. It must be understood, of course, that a proposer who was already subject (or likely to become subject) to special risks has always been required to pay a suitable extra premium as and when the extra risk arose, and that in such cases the offices did not waive their rights when the war broke out, although they did not exercise them to the full. In certain directions there was a failure to appreciate the difference between the case of a life which was not hazardous until the great emergency made it so, and that of a life (*e.g.*, a regular officer) which was always understood to be hazardous. In the former case the offices freely assumed the unforeseen burden—in the latter they charged an extra premium which, as already suggested, subsequent experience proved to be by no means adequate.

The development of aviation is introducing a fresh, and practically an unknown, risk. Some companies definitely decline to cover persons who appear likely to engage in aviation to any appreciable extent, although they grant an unrestricted contract in cases where there appears to be no reason to anticipate any special liability.

In some cases it will be found that the information relating to these matters is contained under several headings in the prospectus and in the printed policy form. One office, however, has made a bold effort to include all the restrictions in one clause. At first sight the result (which contains about 250 words) appears to be formidable, but a closer acquaintance somewhat modifies the first impression.

Infringement of these restrictive provisions leads, of course, to a penalty. Some offices provide for the avoidance of the policy and for the forfeiture of the premiums paid, but in many instances the clause is not so drastic, and there is a growing tendency to afford protection to the *bona fide* pecuniary interests of innocent third parties.

The last division (D) comprises miscellaneous policy conditions, and does not require much attention. A suicide clause is incorporated in many policies, but it is almost always limited in its operation to a comparatively short period from the date of issue, and the interests of third parties receive suitable treatment. It is certainly arguable that a clause of this type might well be adopted by all offices, since, however great may be the care bestowed upon the scrutiny of proposals, occasionally a would-be suicide succeeds in obtaining the policy requisite to give his action a financial backing. Moreover, it is difficult to imagine that even a modern canvasser finds the absence of a suicide clause of any real help to him for purposes of persuasion.

In most policies there are various provisions of a legal nature, such as the clause intimating that notices of assignment are received only at the head office of the company, and the jurisdiction clause which makes an English company issuing policies to persons residing in another country subject (as regards such policies) to the jurisdiction of the courts of that country. There is also the clause which states definitely that the policy is issued on faith of, and depends upon, the accuracy of the information furnished by the proposer.

Finally, it is suggested that a study of the subject of policy conditions will make clear the fact that each privilege given costs money, even although the value may not be susceptible of accurate calculation. Thus, an unusually generous scale of surrender values will mean that more money must be paid away to those who relinquish their policies, with consequent diminution of the sum available for other benefits, such as bonuses. From this point of view the wide diversity of practice among the offices is seen to be an advantage to a discriminating proposer. It means that for a given outlay he can obtain approximately the same total benefit made up in varying proportions. A rather lower premium or a rather higher bonus in one case may be counterbalanced by more liberal conditions in another case. The proposer, of course, should select that policy which appears most likely to suit his present and his future needs. Whatever may be his decision, he should recognise that the policy conditions are a real factor, and that no valid comparison can be made without taking them into due account.

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CHAPTER III.

THE PRINCIPLES UNDERLYING THE CONSTRUCTION OF MORTALITY TABLES, AND THE HISTORY AND DISTINCTIVE FEATURES OF WELL-KNOWN TABLES.

By C. W. Kenchington, F.I.A.

Mortality tables are to the actuary what tables of strains and stresses are to the engineer, and as scales and compasses to the draughtsman. They are the instruments by means of which he makes his calculations in problems involving the duration of human life, and by which he carries out his design, whether that be the formation of rates of premium or the valuation of contracts already granted.

Just as the tables used by the engineer have been improved by experience and observation, and as scales and compasses have advanced in range and precision by greater variety and accuracy in construction, so also mortality tables, and the methods adopted in compiling them, have progressed from crude beginnings to a state closely approaching perfection.

Scientific observation has shown that variations in rates of mortality are attributable to certain well-defined causes. In every mortality table age has to be taken into account, because rates of mortality vary with age. Sex is another important factor, because it has been shown that the mortality of males is different from that of females when all other circumstances surrounding the lives are apparently identical. Occupation, climate, and marital condition all affect mortality rates, while selection of lives by medical examination, or by their own choice, is in some respects a still more important factor. A comparison of mortality rates derived from population statistics during recent successive decennial periods shows that there has been a progressive diminution in such rates, and further diminution in the course of time is one of the principal aims of the public health services.

With all these and perhaps other varying influences to be taken into account, it is not always a simple task for the practising actuary to choose a mortality table, that he considers entirely suitable for his purpose, from those that are already available to him. In special work it is frequently necessary for him to make preliminary trials with standard tables to test their suitability, or even to construct an original mortality table from data relating to the lives with which he is dealing or to a similar class of lives. The choice of table is a matter in which the experience of the actuary is of primary importance, and while it is possible to describe the principles underlying the construction of mortality tables, and to give in outline the special features of some existing tables, it is impossible, within the space at disposal, to do more than indicate upon a broad basis the conditions under which such tables can appropriately be used in practice.

In its simplest form a mortality table purports to show the life history, or a portion of the life history, of a body of lives unaffected by any influence other than death, and the plan of tabulation is to record the number of such persons living at birth (or at the youngest age brought under observation) and to state the number of the survivors of those persons living at successive exact birthdays. Because such tables are a record of life history, they are sometimes called Life Tables. By implication it follows that if the numbers of survivors living at successive birthdays are tabulated, the difference between the numbers living at two successive ages is the number who die in the year of age following the younger of those two ages. Thus, for instance, if there are 1,000 persons aged exactly 55, and the survivors at age 56 are 980, then 20 have died in the year of age 55 to 56, and it would be stated that the rate of mortality at age 55 had been 20 per thousand, or 2 per cent., while if these figures were being used to estimate the chance of a person aged exactly 55 dying within a year, it would be said that the probability of dying is ·02. It is usual in mortality tables to tabulate not only the numbers living at successive exact ages, but also the numbers dying between their successive birthdays, the number of deaths being entered against the completed year of age.

The data from which a reliable mortality table can be formed, are mainly of two kinds—population statistics and the experience of assured lives. Both of these classes are illustrated in the mortality tables subsequently described.

In some respects the most favourable conditions for the formation of a mortality table would be attained if it were possible to keep a record of a large number of persons and to trace them from the time of their birth until every one of them had died, tabulating the number of such persons who attained their exact birthdays throughout life. Such a method of construction is, however, impracticable, because in order to obtain results of any value, the number would have to be so large that it would be impossible to trace each individual year by year, while the time taken in construction would be prohibitive. Even if such a table were constructed, it is doubtful if it would be of any practical use as a guide to future mortality.

It thus becomes necessary to construct mortality tables by an inverse process, that is to say, it is first necessary to obtain from the data a measure of the rate of mortality, at successive exact ages, and from this to pass to the fundamental columns of living and dying of the mortality table.

This can be best explained by means of an example, and for this purpose the following table is set out :

Age. (1)	Number Living, derived from Birth and Census Returns. (2)	Number Dying, according to Death Records. (3)	Rate of Mortality. (4)	Living. (5)	Dying. (6)
0	632,698	116,490	·18412	100,000	18,412
1	522,777	34,338	·06568	81,588	5,359
2	490,999	13,564	·02763	76,229	2,105
3	478,440	8,584	·01794	74,124	1,330
4	469,763	5,778	·01230	72,794	896

The table relates to the male lives in the London life table (1891 to 1900) to which reference is made in detail later on. The numbers in column (2), which were deduced by a technical process from the census returns and birth records, represent the number of male children born, and the numbers of those who attained exact ages 1, 2, 3 and 4 during the ten years over which the observations extended. In column (3) the figures are the actual number of male children whose deaths were recorded during the ten-year period. Thus, for instance, 116,490 represents the total number who died before the attainment of age 1, and 34,338 is the number of recorded deaths occurring between ages 1 and 2. The rate of mortality, as set out in column (4), is the decimal fraction expressing the result of the division of the number on the same line in column (3) by the corresponding number in column (2) ; thus, for example, $116{,}490 \div 632{,}698 = {\cdot}18412$, and similarly for the other figures.

It is to be noted that the figures in column (2) at the successive ages have no direct relationship to each other. The 522,777 tabulated on the second line are not the survivors at age 1 of the 632,698 children born, neither are the 490,999 at age 2 the number who attain age 2 out of the 522,777 living at age 1. This is because the figures refer to a fluctuating population affected by migration, and also because they refer to the same period of ten years, so that it is evident that some at least of those who attained age 1 during that period will have been born in the year 1900, whilst in the case of the 490,999 scheduled at age 2, some of the births out of which they arose occurred in the years 1899 and 1900. In other words, the numbers living in column (2) are affected by causes of variation other than mortality.

Now the mortality table, as already defined, shows the numbers who die at each age from year to year out of a given number born. A section of such a table is given in column (5). Starting with an arbitrary number at age 0, referred to as the radix, and for convenience taken as 100,000, and multiplying this by the rate of mortality at age 0, namely, ·18412, already deduced from the data, we have $100{,}000 \times \cdot 18412 = 18{,}412$ as the number dying before the attainment of age 1 out of 100,000 assumed births. Subtracting 18,412 from 100,000, we obtain 81,588 as the number of survivors at age 1 out of the assumed births. This number appears on the second line in column (5) of the tabular statement. In its turn it is multiplied by the appropriate rate of mortality, namely, ·06568, and since $81{,}588 \times \cdot 06568 = 5{,}359$, we have 5,359 as the number of deaths occurring between ages 1 and 2, and, in consequence, the survivors at age 2 are $81{,}588 - 5{,}359 = 76{,}229$. Following on the same principle the column of the numbers living is continued to the extremity of old age.

It may not at first sight be apparent why so much trouble is taken in deducing a series of numbers, such as the living column in the mortality table, seeing that the rates of mortality as deduced from the data are already known. The explanation is, however, very simple. Not only are the rates of mortality at individual ages required, but it is also necessary to be able to measure the risk of death over longer intervals, and for this purpose we require a series of numbers living unaffected by any influence other than that of death. Suppose, for instance, we require to know how many children survive to age 4 out of 1,000 births; our table enables us to make the calculation immediately, because it shows that the number surviving to that age out of 100,000 is 72,794, and out of 1,000, the number of survivors will be 727·94. The decimal part of this number appears meaningless, as it is obviously impossible for ·94 of a person to be living. If we reduce our enquiry to a single individual the answer in actual fact will be that the child will be either alive or dead at age 4, whereas the appropriate proportion from the table will be ·72794. In this form, and when reduced to individuals, the decimal fractions are referred to as probabilities. Thus, according to the particular table chosen as an illustration, the probability at birth of a child attaining age 4 is ·72794. If the table had been extended to age 50, the number living at that age would have been 48,273, and, in consequence, the probability at birth of a male child attaining age 50 is ·48273 on the basis of the London life table.

The foregoing example was based on population statistics, and it was stated that the numbers living as given in column (2) were derived by a technical process from the census returns. This technical process need not be described in detail, but it must be indicated in outline. Census and death returns generally furnish information at individual ages up to age 5, thence in quinquennial groups of ages to age 15 (or 25), and then in decennial groups—15 to 25, 25 to 35, and so on. The process alluded to distributes the numbers as recorded in groups, by means of a mathematical analysis, into the numbers living at successive ages. In a similar way, the deaths, which are also given in groups of ages, are distributed into individual ages. It is further to be noted that in the census schedules the information asked for, as to age, is the age last birthday, and in consequence, if all the forms were filled up correctly, the collated total at, say, age 30, would be the number living on the census date aged 30 last birthday. Some of these would be very nearly aged 31, whilst others would be only just 30, so that, on the average, the number recorded at age 30 may be considered aged 30 years and 6 months.

Allowance is made for this fact (before passing to the rates of mortality at successive exact ages) by a method which is most readily explained in symbols, which, as they are quite simple, will be easily understood.

In actuarial notation, L_x stands for the number living between ages x and $x+1$, whilst l_x represents the number living at precise age x. The symbol d_x is used for the number dying aged x last birthday, and the rate of mortality at age x, for which q_x is written, is found by dividing d_x by l_x. That is to say, $q_x = \frac{d_x}{l_x}$.

Now the division of the deaths at age x by the population at that age, as derived from the statistics, gives the ratio $\frac{d_x}{L_x}$ which is known as the "central death rate," and is symbolised by m_x.

Since the deaths may be assumed to be equally spread over the year of age, we can write $l_x = L_x + \frac{1}{2}d_x$, and by the substitution of this value for l_x in the formula for the rate of mortality, we find the relationship between q_x and m_x.

Thus—

$$q_x = \frac{d_x}{l_x} = \frac{d_x}{L_x + \frac{1}{2}d_x}$$

$$= \frac{\frac{d_x}{L_x}}{1 + \frac{1}{2} \cdot \frac{d_x}{L_x}}$$

$$= \frac{2m_x}{2 + m_x}.$$

This formula was employed in the earlier tables, but more recently the process of finding m_x first and then passing to q_x has been dispensed with by the use of the formula

$$q_x = \frac{d_x}{L_x + \frac{1}{2}d_x}.$$

The method here indicated is the division of the number of deaths at age x last birthday by the population aged x last birthday increased by half the number of deaths at that age.

The method of constructing mortality tables from the data of life assurance companies is essentially different from that adopted in the case of population tables. In the latter, no account can be taken of individual lives. Some of the deaths recorded will be of persons who were not counted in the census enumeration or enumerations, whilst, on the other hand, the deaths of some of the lives appearing in the census may not figure in the death records, by reason of absence from the country. In an assurance experience the data have reference to specified individuals, and it is, therefore, possible to relate the deaths correctly to the persons among whom they occurred.

Various disturbing influences have to be taken into account, such, for instance, as the fact that lives pass from observation not only by death, but also by withdrawal, which may be either voluntary on the part of the assured, or by the termination of the contract of assurance or by the close of the observations while the assured are still living.

From the data the number of lives exposed to risk at successive ages is obtained, and when the number of deaths is divided by the appropriate "exposed to risk" the result is the rate of mortality. The rates of mortality can then be applied, in exactly the same way as already described for a population table, to form the living and dying columns of the mortality table.

It is usually found that the rates of mortality deduced from the data do not progress with that regular flow from age to age that would be expected if the data at disposal were sufficiently large to yield a true representation of the law of mortality. The tendency of the rates is generally clearly evident, but accidental irregularities due to paucity of data and other causes are manifested. It is, therefore, necessary to apply to the table a process called "graduation" which is effected either by means of a mathematical formula or by what is known as the "graphic method."

In the "graphic method," the computer first draws on cross-ruled paper a smooth curve representing approximately the series of values to be adjusted, and then amends it by successive trials till he is satisfied that the graduated table which he has deduced represents in an idealized form the mortality of which the actual experience forming the data was a sample.

The mathematical methods are of too technical a character to be dealt with here. A list of works dealing with the subject is, however, given at the end of the chapter.

For life assurance offices the uses of a mortality table are mainly two, viz., the computation of correct premiums corresponding to the benefits assured, and the periodical valuation of the liabilities under their contracts, and, among other uses to which such a table is put, are the calculations upon which surrender values and bonus options are based.

For all these purposes it is necessary to have an instrument as perfect as possible, but the present state of perfection in mortality tables has only been attained, as in other scientific matters, by a process of evolution—improvement succeeding improvement.

In the earliest days of life assurance the tables employed were deduced from population statistics, particularly the Northampton and Carlisle tables, but it was soon realised that these tables were in many respects unsuitable for the purpose. The Northampton table was constructed on incorrect assumptions, and showed a heavier rate of mortality than that of the general population. The Carlisle table, though it did not suffer from these defects, was still on the safe side from the office point of view as regards the rate of mortality, at least so far as the premiums deduced therefrom for whole life assurances were concerned.

To overcome some of these difficulties, various tables were compiled from the records of individual companies, but these, through paucity of data, and the varying stringency exercised by the offices in the selection of risks, were little better for general use.

This defect in the volume of data was sought to be remedied in 1838 by the compilation of the Seventeen Offices' Table to which, amongst others the *Equitable*, *Guardian*, *London Life*, *Scottish Widows*, and *Sun* offices contributed their experiences. The Seventeen Offices' Table did not, however, gain general acceptance, and another combined investigation of the experience of twenty English and Scottish offices was undertaken by the Institute of Actuaries, the results of which were published in 1869. The tables deduced from this experience are described later on under the heading " Institute of Actuaries Tables."

Although it had been realised that the rate of mortality varied with the class of lives, and that, in particular, the medical examination of assured lives rendered them, as a class, better than the general population, it was not until the twenty offices' experience had been investigated in detail, that it was found that the duration of assurance had so great an effect on the rate of mortality of assured lives that its influence could not be neglected.

The superiority of assured lives over the general population was already manifest, but the incidence of the favourable mortality, according to the duration of assurance, had not until then been demonstrated. This favourable mortality arises as the " effect of selection," and tables constructed in such a form as to show the effect of the duration of assurance are called " select tables." In the " select tables " constructed by Dr. T. B. Sprague on the basis of the twenty offices' healthy male experience, the effect of selection was traced for the five years following entry into assurance, after which period it was found sufficiently accurate to merge the rates into an ultimate table dependent upon age attained alone.

Many theories as to the length of the period for which the benefit of selection lasts have been propounded, and no definite conclusions have ever yet been attained, though it has been abundantly proved that the immediate benefit of the medical examination wears off very rapidly during the first two or three years following entry, and to a large extent it is merely a matter of convenience whether the benefit is taken as being exhausted after five or after ten years.

Although a select mortality table was constructed by Dr. Sprague on the twenty offices' experience, the form in which the data were supplied was not suitable for the purpose, and certain reasonable assumptions had to be made. In order to test the incidence of the mortality of assured lives much more thoroughly than had been possible from these data, a further combined experience of sixty British offices was compiled under the joint auspices of the Institute of Actuaries and the Faculty of Actuaries from the records of the offices during the period 1863 to 1893. This experience, which is subsequently referred to in greater detail, established a further proposition, viz. that selection is not only exercised by the offices, but also by the assured, since the latter show, by the class of assurance taken, a selection adverse to the offices. This adverse selection can be summarised in the phrase, " the lower the rate of premium the higher the rate of mortality."

It is also contended by many writers that adverse selection arises by reason of the withdrawals, or lapses, taking place mainly amongst those who retain their full health and vigour, leaving a greater proportion of deteriorated lives amongst those who maintain their policies. Other writers hold, however, that lapses principally occur through the assured's inability, from financial causes, to maintain the assurance, and that this condition seems to indicate inferior mortality amongst those who withdraw.

In order to illustrate the important effect of selection, extracts are given in the accompanying tables from the select tables deduced from the British offices experience in the whole-life non-participating assurance section on male lives. The effect of selection is traced in this table for the five years following entry, after which time it is assumed to be exhausted, and the rates of mortality are set out according to ages attained without further reference to the duration of assurance other than the statement that five or more years have elapsed since entry.

It will be seen from the table of rates of mortality what an important effect selection has. For example, the rate of mortality at age 25 in the year immediately following entry into assurance is ·00446, whereas the rate at the same age when the effect of selection is assumed to have worn off is ·00766 ; that is to say, it is more than 70 per cent. greater than in the year following entry. The rapid increase in the rate of mortality from ·00446 to ·00611, (a difference of ·00165) in passing from the first to the second year of assurance is in marked contrast to the increase from ·00766 to ·00775 (a difference of only ·00009) consequent upon an increase of age from 25 to 26 when selection has ceased to be operative.

Numbers Living analysed according to Age and Duration of Assurance by the $O^{[NM]}$ Mortality Table.

Age at Entry $[x]$	Years Elapsed since Date of Assurance.						Age attained $x+5$
	0	1	2	3	4	5 or more	
	$l_{[x]}$	$l_{[x]+1}$	$l_{[x]+2}$	$l_{[x]+3}$	$l_{[x]+4}$	l_{x+5}	
20	100,000	99,580	99,003	98,333	97,616	96,879	25
21	99,264	98,844	98,267	97,596	96,877	96,137	26
22	98,530	98,109	97,530	96,857	96,135	95,392	27
23	97,794	97,369	96,790	96,115	95,389	94,641	28
24	97,055	96,630	96,048	95,370	94,639	93,886	29
25	96,316	95,887	95,302	94,619	93,884	93,124	30
26	95,567	95,135	94,547	93,862	93,122	92,355	31
27	94,818	94,382	93,791	93,100	92,353	91,578	32
28	94,059	93,618	93,023	92,327	91,574	90,790	33
29	93,300	92,854	92,253	91,550	90,788	89,995	34

Rate of Mortality analysed according to Age and Duration of Assurance by the $O^{[NM]}$ Mortality Table.

Age at Entry $[x]$	Years Elapsed since Date of Assurance						Age attained $x+5$
	0	1	2	3	4	5 or more	
	$q_{[x]}$	$q_{[x]+1}$	$q_{[x]+2}$	$q_{[x]+3}$	$q_{[x]+4}$	q_{x+5}	
20	·00420	·00579	·00677	·00730	·00755	·00766	25
21	·00423	·00583	·00684	·00736	·00764	·00775	26
22	·00427	·00590	·00691	·00746	·00773	·00787	27
23	·00434	·00595	·00698	·00755	·00784	·00798	28
24	·00439	·00601	·00707	·00766	·00796	·00812	29
25	·00446	·00611	·00716	·00778	·00810	·00826	30
26	·00453	·00617	·00725	·00789	·00823	·00841	31
27	·00459	·00627	·00736	·00803	·00839	·00860	32
28	·00469	·00636	·00748	·00816	·00855	·00876	33
29	·00478	·00647	·00762	·00832	·00873	·00899	34

Mortality tables constructed from assurance experiences without analysis according to duration of assurance are called "aggregate tables." The H^M table, already referred to, is an aggregate table, so also is the O^M, which is the table based upon the data of the whole-life participating policies on male lives in the sixty British offices experience, and which corresponds to the H^M table in the twenty offices' experience. Aggregate tables are extremely useful in the valuation of the liabilities of life offices, for which purpose the use of select tables would be prohibitive on account of the labour involved in their application, but they are unsuitable as the foundation for office premiums. There is a further class of table known as the "truncated aggregate table." Two standard tables of this description are in existence, namely, the $H^{M(5)}$ and the $O^{M(5)}$. They are based on the same data as the H^M and O^M tables respectively, except that the experience within the first five years following entry is excluded. As the period of specially favourable mortality is eliminated, they show rates of mortality in excess of the H^M and O^M tables, and in combination with the latter are used for valuation purposes as approximations to valuation on a select basis.

Before leaving the subject of the construction of mortality tables, some reference must be made to a column which is frequently added to those already mentioned. This column is that which represents the "expectation of life," a term that simply means the average future life-time which the number of persons living at a particular age will enjoy. The column is formed by summing the number living at all ages subsequent to the age for which the "expectation" is required, dividing this sum by the number living at that age, and adding ·5. With the exception, however, of making comparisons between the death rates in different mortality tables, for which, since it is but slightly affected by graduation, it is very suitable, the "expectation of life," is, for practical purposes, of but little value. Certainly no actuarial calculations are based upon it, as is commonly supposed. It applies, not to individuals, but to a body of persons of the same age; and to speak of the "expectation" of a particular man as being a certain number of years, is to place a meaning on the term which it was never intended to bear, and which, accordingly, is very misleading.

The history of mortality tables demonstrates in a remarkable manner the beneficial influence which the construction of the earlier tables produced, not only in facilitating the progress, but in improving the practice of life assurance societies, and so forming, in fact, epochs in the history of the progress of life assurance.

With the publication, in 1771, of Dr. Price's work on reversionary payments, which contained the first Northampton table, may be said to commence a new era, this being the first mortality table recognised and adopted as a basis for the purpose of calculations for life assurance. It was followed by other tables which have been used for similar purposes at various times during the nineteenth century. The most important of these tables, with the methods of their construction, their distinctive features, and the uses for which they were best adapted will now be briefly described.

Northampton Table.

The history of this table is a remarkable one. Dr. Price, the compiler of it, formed two distinct tables, based on the accounts of the ages at death of persons who had been buried in the parish of All Saints, Northampton. The second table, which may be considered as *the* Northampton table, was based on the number of deaths during the forty-six years, 1735 to 1780, which was 4,689. In constructing this table, Dr. Price started with a radix of 10,000 births. He assumed, quite erroneously, that, because the number of burials slightly exceeded the number of christenings—a circumstance mainly due to the presence of a large proportion of baptists in the town—the population had been for a long time stationary. The fallacy in the method was due to the fact that deaths only were taken into account, instead of the combined records of population and deaths.

The general effect of the application of this table to the calculation of rates of premium for assurances in this country—especially at the younger ages at which policies are usually granted—was to create great injustice, such rates, owing to the heavy rate of mortality brought out by this table, being far more than necessary. In other parts of the world, however—such as the West Indies, where the death-rate is much higher than in this country—it has been found that the Northampton table fairly represents the mortality experienced. It should be added, that, although the rate of mortality shown by the table is excessive, the reserves brought out by its use in valuations are very inadequate.

In 1808, when Government life annuities were first established as part of a scheme for the repayment of the National Debt, the annuity tables were computed upon the Northampton Table with the result that annuities were granted at prices much below their value. A committee of the House of Commons later made an investigation into the matter, but before the error was rectified, about two millions of money had been lost to the country.

Carlisle Table.

This table was constructed by Mr. Joshua Milne, in 1815, from data which exhibited the population of the parishes of St. Mary and St. Cuthbert, Carlisle, in 1780 and also in 1787, as well as the number of deaths, arranged in quinquennial groups of ages, which had taken place in the same two parishes during the nine years, 1779 to 1787. In order to form his life table, Milne added together in age groups the results of the two censuses, and multiplied the sum by four, this being equivalent to the sum of the average population in each of the eight years covering the observed period. To obtain the corresponding number of deaths during this period, he deducted one-ninth from the total number recorded in nine years. From these grouped data the numbers living and dying in the two parishes were deduced by a graphic process for every year of age, and by an inverse process, similar to that already described, the mortality table was formed.

Owing to its poor graduation, and to the insufficient reserves which it brings out, the Carlisle table has been the subject of adverse criticism, but, at the time when it was published, it was a vast improvement upon any existing table. Milne himself considered that, though it had been constructed from the data of two parishes only, the results it exhibited would probably vary very little from the general law that obtains throughout the Kingdom, taking towns and country together, if "we except the children under five years of age, or at most under ten." One characteristic of the table, which makes it unsuitable for the use of life offices, is that in the original observations, the proportion of the females to males is 55 to 45, whereas, in assured life experience, females form, as a rule, a much smaller proportion of the total number of lives. It has, however, been shown that the rates of premium brought out by this table very closely approximate to the correct ones. For valuation purposes, on the other hand, the table has become obsolete, except, possibly, for contingent assurances, reversionary annuities and similar contracts.

English Life Tables.

The mortality tables, known by the above title, are eight in number. In each of them the sexes are dealt with separately.

Table No. 1 was based upon the census returns and the deaths registered in England and Wales during the year 1841, and was published in the Fifth Annual Report of the Registrar-General, issued in 1843. The general results of this table are in remarkable agreement with those yielded by the two subsequent tables, which had the advantage of a more extended series of observations.

Table No. 2 was based upon the same census returns as No. 1. The deaths, however, covered a period of seven years, viz., 1838 to 1844 both inclusive. This table was published in the Twelfth Annual Report of the Registrar-General, dated 10th January, 1853.

Table No. 3 was of a far more extensive and complete character than either of the two preceding it. The data employed for its construction were the census returns for the years 1841 and 1851, and the deaths registered during the period 1838 to 1854 both inclusive—seventeen years. The various tables relating to this experience, which were published, first as a separate volume by the authority of the Registrar-General in 1864, and, three years later, in the Twenty-eighth Annual Report of the Registrar-

General, were all calculated at the General Register Office, by means of Scheutz's calculating machine. The work was divided into three sections, each of which contained a separate life table. The first section related to persons, the second section to males only, and the third to females only. This table was for many years recognised as a standard for the purpose of computations relating to the general population of this country, and particularly for Industrial Assurance business.

Table No. 4 which was constructed from the census returns of 1871 and 1881, and the deaths recorded during the ten years 1871 to 1880, was published in the supplement to the Forty-fifth Annual Report of the Registrar-General, issued in 1885. The results of this table are remarkable as showing, in a marked degree, a noticeable decline in the English death-rate at the younger ages in both sexes, though at the older ages the rate of mortality appears to be slightly more unfavourable in this table than in No. 3. The causes to which this increased longevity may be traced are mainly two—the operation of the Public Health Acts and the steady decrease of deaths from tubercular disease—a disease which is most prevalent in the earlier years of life. No doubt, too, the advance of medical science and of education during the half century had no small influence on the death-rate.

Table No. 5 is of a similar character to No. 4, being constructed from the censuses of 1881 and 1891, and the deaths during the intervening decennium, but the method of construction was based upon accurate scientific principles in regard to the distribution of the grouped populations and deaths into individual ages. The table is published in the supplement to the Registrar-General's Fifty-fifth Annual Report, issued in 1897. Here, again, we observe an improvement in the death-rates over those shown by the preceding investigation, ten years before, up to age 45, after which age the rates are higher. This variation in the death-rates is principally due to the more accurate method of construction of the table as compared with those that preceded it, whilst, to some extent, the higher mortality at the older ages may be accounted for by the fact that overstatement of ages in the census and death returns was not so prevalent as formerly.

Table No. 6 was based on the censuses of 1891 and 1901, and the deaths during the decennium, and is contained in the supplement to the Registrar-General's Sixty-fifth Annual Report, published in 1907. In this report a full description is given of the method by which tables No. 5 and No. 6 were constructed.

The special characteristics of the table, as compared with No. 5, are that the death rates of children of both sexes showed an increase of about 2 per-cent., and there were also slight increases in the rates for males between ages 55 and 65, and for females between ages 65 and 75. At all other ages the death-rate shows a decline from the 1881/1891 standard, the decrease being specially marked in the age group 5 to 35.

English Life Table No. 7 was based on the censuses of 1901 and 1911, and the deaths during the ten years 1901 to 1910 both inclusive. The table appears, with English Life Table No. 8 and some other tables, in the supplement to the Seventy-fifth Annual Report of the Registrar-General, published in 1914. For the first time in the history of the construction of the National Life Tables the services of an actuary were secured for the investigation of the valuable data made available by the census figures, and the report of Mr. George King, the well-known consulting actuary, which appears in the supplement referred to, clearly shows the advantage of placing so important a matter in the hands of an expert. Although the report contains much that is technical, it deals quite clearly with the principles of the construction of the tables in a way that can be understood by those without an advanced mathematical training, and, if a selection has to be made as between the reports on the National Life Tables, this is the one to be read.

English Life Table No. 8 differs from No. 7 in that it was based upon one census enumeration only, namely that of 1911, and upon the deaths for the 3 years 1910 to 1912. It will thus be seen that the mean date of the No. 8 Table is 5 years later than that of Table No. 7. A comparison of the numbers who die, within 10 years, out of 100,000 commencing at each age according to the last three tables, shows that, with a minor exception in Table 8 at the youngest age in the case of male lives, there has been a continued diminution in the mortality. This is illustrated in the following table:

Number who die within 10 years out of 100,000 commencing at each age.

Age.	Males.			Females.		
	Table.			Table.		
	No. 6.	No. 7.	No. 8.	No. 6.	No. 7.	No. 8.
5	3,321	2,647	2,618	3,406	2,775	2,624
25	6,608	5,466	4,687	5,945	4,681	4,016
45	17,522	15,250	13,799	13,907	11,966	10,799
65	52,192	49,708	48,476	47,028	43,449	41,216
85	97,750	96,565	95,224	95,989	94,464	93,008

The saving of life indicated by the No. 8 standard is over 19 per cent. for males, and nearly 22 per cent. for females, as compared with the No. 6 figures. For purposes connected with National Health Insurance, the Insurance Commissioners had caused a mortality table to be constructed whose mean date was 30 June 1909, and it is interesting to observe that this table falls into chronological order with regard to the progressive decline in mortality.

A more extended comparison can be made between the tables by reference to the following schedule:

English Life Table.	Expectation of Life at Birth.		Age at which the Number Living is Reduced to One-half of the Number of Births.	
	Males.	Females.	Males.	Females.
No. 3 ...	39·91	41·85	44–45	46–47
No. 4 ...	41·35	44·62	47–48	52–53
No. 5 ...	43·66	47·18	51–52	56–57
No. 6 ...	44·13	47·77	52–53	57–58
No. 7 ...	48·53	52·38	58–59	62–63
No. 8 ...	51·50	55·35	61–62	65–66

This schedule not only demonstrates the improvement in vitality that has taken place, but it also clearly shows the superiority of female life, as compared with male life in the general population.

Other Mortality Tables derived from Population Statistics.

In the last edition of this work, a section of Chapter II. was devoted to the mortality tables known as the Healthy Districts Tables, and, in another section, particulars were given of the London Life Table. These tables have now comparatively little interest, because they have been superseded by the sectional life tables published with English Life Tables No. 7 and 8 in the supplement to the Seventy-fifth Annual Report of the Registrar-General. It is unnecessary therefore to repeat the descriptions given in the last edition. It is sufficient to say that the Healthy Districts Tables were based upon statistics derived from certain areas where it was known that mortality rates were light, and in consequence the resulting tables exhibited rates of mortality considerably below those of the full National Tables of corresponding date. As to the London Life Table, its chief points of interest, in relation to its construction, were the correction of the data to make proper allowance for deaths in institutions, so that the deaths might be brought into correct relationship with the living, and the application of modern technical methods in making the calculations. The description of the methods is very lucidly set forth in the report.

The sectional life tables, already referred to, can be summarised as follows. They were all based upon the estimated populations of the several districts as at 30 June 1911 and upon the deaths in those districts during the two years 1911 and 1912. The areas are described as (*a*) Administrative County of London, (*b*) Aggregate of County Boroughs, (*c*) Aggregate of Urban Districts and (*d*) Aggregate of Rural Districts. In this form the tables give information that is of real value in showing the relative mortality as influenced by density of population, and for comparative purposes as regards areas comprised within each of the groups. It is interesting to observe that the general trend of the mortality rates disclosed by this analysis was that they were lowest in the rural districts, that the rates for the urban districts were next in sequence, that London came next, and that the highest mortality was shown in the aggregate of the county boroughs.

The mortality rates of women, analysed according to marital condition, were also deduced and the report should be consulted by those who wish for further information on this matter.

Seventeen Offices' Table.

The data for this experience were collected and arranged in 1838, under the superintendence of a Committee of Actuaries. The total number of observations was 83,905, these being upon policies, not lives. For very young and old ages the facts were few, so that no great reliance can be placed upon the final results at these ages. Under the first schedule of "The Life Assurance Companies Act, 1872," as well as by an Act passed in 1873 by the Legislature of New Zealand, this table was made the standard for determining the rate of mortality for valuing policies in a company about to be wound up. Notwithstanding this statutory recognition of its value, the table has never been published in this country, only a small number of copies having been printed for private circulation. In the United States, however, where this table is still held in high esteem under the title of "The Actuaries' Table," it has been widely used for valuation purposes.

Institute of Actuaries Tables.

These tables were based upon data furnished by twenty life offices—ten of which were English and ten Scottish—and referred to a period ending on 31st December, 1863.

Four tables in all were prepared relating to :—

(1) Healthy males ... ... (H^M)
(2) Healthy females ... ... (H^F)
(3) Healthy males and females combined ... (H^{MF})
(4) Diseased lives, male and female... ... (D^{MF})

Of these the H^M is much the most important. It was based on 130,243 lives, and the total number of years of life observed amounted to 1,190,140.

The data were furnished by the contributing offices on cards which set out the age next birthday at entry, the calendar year of entry and exit, and the mode of exit.

To determine the current age at exit the difference between the calendar years of exit and entry was added to the age at entry, for which reason the method of construction is known as the calendar year method. Two fundamental assumptions were made in the treatment of the data, namely (1) that entries and exits occurred uniformly over the calendar year, and (2) that, on the average, the age of new entrants was six months less than the age next birthday at entry. Taken together, these assumptions implied that the lives could be taken as attaining their respective ages next birthday on the 31st December following entry. Having thus fixed a point as at which, on the average, an exact birthday was attained, the process of construction was very simply carried into effect.

The method cannot be defended on scientific grounds, as it depends too largely on the assumptions made, and on the operation of averages, but it was the best that could be adopted with the data at disposal.

The table was graduated with satisfactory results by a mathematical process, devised by Mr. Woolhouse, and it only remains to be added that it became the recognised standard for life office valuations. We have already referred to the analysis of the experience according to duration of assurance, but it may be mentioned that a volume of monetary values, based on these select tables, was published in 1896.

British Offices Tables.

These tables embody the results of the most recent and most comprehensive investigation into the mortality of assured and annuitant lives. Sixty British offices contributed their experience for the thirty years, 1863 to 1893, and the investigation was made under a joint Committee of the Institute of Actuaries, as representing the English offices, and of the Faculty of Actuaries, as representing the Scottish offices.

The unadjusted data are published in four volumes, comprising (1) whole-life assurances, (*a*) participating, and (*b*) non-participating on male lives; (2) a similar volume for female lives; (3) endowment, contingent, temporary, and joint-life assurances, for male and female lives separately; and (4) annuities, male and female lives separately. Graduated tables were formed on the basis of the annuitant data for male and female lives separately, and from the whole-life assurance experience on male lives under with and without-profit policies separately. The annuitant and non-participating whole-life assurance experiences were graduated in select form, whilst the data of the participating whole-life assurances on male lives were used as the basis of aggregate, truncated aggregate and select tables. All these tables were published officially, together with very extensive tables of monetary values based upon them.

For convenience of reference the tables deduced from the British offices experience are designated by the initial letter O, and the particular table is indicated by the letter or letters on the right hand above the line. Since the principal table refers to whole-life assurances with profits, no special symbol is used to indicate this class of assurance, but for the other classes the initial letter of the name of the class of assurance is employed. Thus E indicates endowment assurance, N stands for non-participating, *a* for annuitants, and so forth. The letter M or F is added to indicate the sex. When the identifying letters are enclosed in square brackets, select tables are referred to, and when a numeral enclosed in round brackets follows the letter denoting sex, the truncated table is indicated. Thus, for example, $O^{[NM]}$ means the select table deduced from the British offices experience under non-participating whole-life assurances on male lives, and $O^{M(5)}$ stands for the truncated aggregate table excluding the first five years of assurance, under whole-life participating assurances on male lives.

Such of the data as referred to policies or annuities already in force when the observations commenced in 1863, are called the "old assurances" or "old annuities" respectively, whilst the cases brought under observation during the period of thirty years are referred to as "new assurances" or "new annuities." The graduated tables were based upon the combined old and new experiences.

Very full details were given on the cards as to the dates of birth, entry and exit. It was thus possible to use the nearest age at date of entry as an approximation to the exact age, and, having fixed the age at the initiation of the contract, the cases were followed strictly according to years of duration.

A volume was published setting forth explicitly the principles and methods adopted in the compilation of the experience and the graduation and construction of the tables.

The longevity of annuitants is proverbial, and the annuitant experience clearly demonstrated that the purchase of an annuity indicates a more effective selection than the medical examination in life assurance. Female annuitants are considerably superior to males in this respect. The rates of mortality vary not only with the age, but also according to the time elapsed since the purchase of the annuity. Hence the annuity experience was deduced in select form, the rates being analysed for the five years following purchase.

In the assurance experience it was shown that the rates of mortality varied according to class of policy. Endowment assurances exhibited a rate but little higher than that of annuitants; next in order of magnitude were the whole-life assurances with limited premiums; then followed with-profit whole-life assurances with premiums payable for the whole term of life, and a still higher rate was shown by the similar without-profit class. Whole-life assurances without profits are chiefly effected for financial purposes, such as collateral security for loans, whilst with-profit policies are usually effected for thrift purposes. [See, however, remarks on this point in Chapter IV.] Selection adverse to the offices was also clearly demonstrated in partnership assurances, contingent-survivorship assurances, and temporary assurances, which are mainly used for financial purposes.

The principal body of statistics was that which referred to whole-life participating policies on male lives with uniform premiums. In this class, for the select tables, the number of lives involved was 735,079, out of which 195,771 deaths occurred, and the years of life exposed to risk numbered 9,306,357.

This section of the experience was, therefore, founded upon a very substantial basis, and the graduated tables deduced therefrom are now looked upon as the standard in office calculations—the select tables, $O^{[M]}$, being used for premium computations; whilst the aggregate, O^{M}, and truncated tables, $O^{M(5)}$, are employed for valuation purposes.

Peerage Tables.

The tables commonly known by this title, embodied in a Paper read before the Institute of Actuaries in the year 1861, are interesting as being the outstanding example of tables formed on the basis of the "life year" method. The observations commenced with the anniversaries of the dates of birth, in the year 1800, of those who were born in the preceding century, and with the actual dates of birth of the remainder, and they terminated on 31st December, 1855. The only assumption made was that, when, as occasionally happened, the year only of birth or death was stated, the day was taken as 30th June.

It was found that, on the whole, the rate of mortality amongst the peerage was much lighter than that amongst the general population, as represented by the English life tables, this advantage being most apparent during the periods of infancy and childhood, since, under the age of 10, the rate of mortality amongst the former class was a little under one-third of that amongst the latter. From ages 10 to 20 the two tables nearly coincide, but from ages 20 to 39 the rate of mortality amongst the peerage familes is in excess of that in the English life table. At subsequent ages, the peerage tables exhibit greater longevity.

These tables are not infrequently used by life offices in classes of assurance where a light rate of mortality is believed to prevail. They are, for example, sometimes adopted as the standard mortality for valuing children's endowment policies, as well as for calculating premiums for assurances on the lives of members of the Royal Family.

It may be added that tables from peerage statistics have been constructed by Dr. Sprague for the purpose of finding probabilities of marriage and issue. The results of his researches have been published in papers, read by him before the Royal Society of Edinburgh and the Institute of Actuaries. Mr. J. R. Hart also made an investigation into the mortality of the married females of the peerage, and Mr. M. M. Lees dealt with the rates of marriage and mortality of the daughters of peers and heirs-apparent.

Government Annuitants Tables.

There have been four investigations into the mortality of persons who have purchased annuities from the Government. The first of these was made by Mr. John Finlaison on data relating to the eighteenth century, and the chief interest of the resulting tables, at the present time, lies in the historical fact that they were the means of exposing the loss sustained by the Government owing to the use of the Northampton Table for the grant of annuities and that they were the first tables which clearly exhibited the difference between male and female mortality. The second investigation, made in 1860 by Mr. A. G. Finlaison—son of Mr. John Finlaison—was in many respects an advance on the earlier work, but as the rates of mortality were higher than those of the first table the Treasury retained in use the old rates.

The third investigation into this subject took place in 1883, and was conducted by Mr. A. J. Finlaison, a grandson of Mr. John Finlaison, and actuary to the National Debt Office. The period under observation extended over sixty-seven years, 1808 to 1875. Owing to the length of the period covered by the experience, it was found practicable to investigate the "effect of selection," which was exhibited according to years expired from date of purchase, 0, 1, 2, 3, and 4 and upwards. The tables thus analysed clearly point to a much lighter rate of mortality during the first few years than subsequently.

These last tables were largely used by British life offices for valuing their annuity contracts, but they have been superseded by the $O^{[am]}$ and $O^{[af]}$ tables already referred to in the account of the British offices experience.

The fourth investigation was made by Mr. J. Blakey, the then Actuary to the National Debt Commissioners, on the experience of Government annuitants during the period 1875 to 1903, his report being dated 1910, and the publication being made as a

House of Commons Paper in August, 1912. The tables are therefore based upon data derived from a period ten years later than that of the British offices annuity experience. On the whole the results tend to confirm the progressive diminution of mortality, and especially is this so with regard to female lives, and during the first few years following the purchase of the annuities. The tables were actually adopted by the Government in granting annuities, and they have been used for the same purpose, and also for valuation, by British life offices. Extended tables of annuity values on joint-lives do not, however, appear to have been published, and accordingly, where more than one life is involved, the British offices tables, $O^{[am]}$ and $O^{[af]}$, are still employed.

It is understood that the Institute and the Faculty of Actuaries are at present (1922) engaged in investigating the recent mortality of annuitant lives.

American Experience Table.

This table, which was based partly upon the experience of assured lives in the Mutual Life Insurance Company of New York, and partly on previous tables, was compiled by the late Mr. Sheppard Homans—the distinguished American actuary—and published by him in 1867. This gentleman, in 1859, had constructed a mortality table based upon the fifteen years' experience of the company, the general results of which conformed approximately to the experience of the English life offices. This table was followed, in 1867, by the "well-adjusted, admirably-constructed American experience table," which was adopted, first by his own office and afterwards by the State of New York, as the official standard mortality table. It was subsequently employed by all New York companies, not only for the calculation of premiums but for valuations and the distribution of surplus. This table shares, with that of the seventeen offices' table, the honour of being the standard adopted by a large number of the States of North America.

Thirty American Offices Table.

The experience, upon which the elaborate tables issued in 1881 were constructed (under the superintendence of Mr. Levi W. Meech), was, up to that time, the largest ever published. As its title indicates, it was compiled from the data of thirty offices in the United States, the experience extending over a period of thirty years, up to the end of 1874.

The experience, which was based both upon policies and amounts assured, was tabulated by the same method as that adopted by the Institute in its experience, with the exception that the ages were taken as those at the nearest birthday instead of the next birthday. Though it is not clear from the tables as to whether rated-up lives, or those exposed to extra risk in any form were included, and, if so, how they were treated, the fact remains that the rate of mortality at ages 25 to 30 is higher than the short duration of the majority of the policies observed would seem to justify. A novel feature introduced into this experience was the continuation of the observations on the "existing," (who formed more than 50 per-cent. of the entrants) by means of a method described as a "final series." The deaths and discontinuances were allotted proportionately among this class of policies, on the assumption that the same rates of mortality and withdrawal as had occurred in the actual experience would prevail among these policies. The effect of this procedure was unquestionably to increase the rate of mortality throughout the aggregate table, but, though very ingenious, it appears to force the statistics. The experience showed that, in America, there appeared to exist a heavier rate of loss than of mortality, the larger policies being less profitable than the smaller—a condition of things which is the reverse of what is generally believed to prevail in this country.

LIST OF READING FOR THE USE OF ACTUARIAL AND OTHER STUDENTS WHO DESIRE TO PURSUE THE SUBJECT.

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Mortality among Peerage, A. H. Bailey and A. Day.—Vol. ix., p. 305. (Apr., 1861.)

Northampton Table, W. Sutton.—Vol. xviii., p. 107. (Dec., 1873.)

Carlisle Table, G. King.—Vol. xxiv., p. 186. (Apr., 1883.)

Graduation by reference to a Standard Table, G. J. Lidstone.—Vol. xxx., p. 212. (Oct., 1892.)

Graduation of O[NM] Table, G. F. Hardy.—Vol. xxxviii., p. 501. (July, 1904.)

Graduation by Summation Formulas, G. J. Lidstone.—Vol. xli., p. 348. (July, 1907), and Vol. xlii., p. 106. (Jan., 1908.)

Construction of Mortality Tables, G. King.—Vol. xlii., p. 225. (Jan., 1908.)

New Method of Constructing and Graduating Mortality Tables, G. King.—Vol. xliii., p. 109. (Dec., 1908.)

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Construction of Mortality Tables, W. P. Elderton and R. C. Fippard.—Vol. xlvi., p. 260. (Mar., 1912.)

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Two Special Numbers (1919) containing *inter alia* Reprints from the following papers :—

Use of Select Tables, T. B. Sprague.

Graphic Method of Graduation, T. B. Sprague.

Graduation Formulas, G. F. Hardy.

Journal of the Chartered Insurance Institute.

Tables of Mortality, W. H. Aldcroft.—Vol. iii., p. 351. (Mar., 1900.)

Construction of Mortality Tables from Population Figures, R. Thodey.—Vol. xix., p. 113. (Sept., 1916.)

Other Books and Papers.

Supplement to the Registrar-General's 75th Annual Report.—Cd. 7512. (1914.)

Account of Principles and Methods (British Offices Experience).—C. & E. Layton. (1903.)

Construction of Mortality and Sickness Tables, W. P. Elderton and R. C. Fippard.—A. & C. Black. (1914.)

Construction of Mortality and other Tables, G. F. Hardy.—C. & E. Layton. (1909.)

Mortality of Government Life Annuitants, H. of C. Paper No. 298. (1912.)

CHAPTER IV.

THE CALCULATION OF OFFICE PREMIUMS FOR ORDINARY LIFE ASSURANCES.

(Revised by R. C. Simmonds, F.I.A.)

Note. (*a*) The term "Ordinary Life Assurances" is used in its conventional sense merely as the complement of "Industrial Life Assurances."

,, (*b*) The calculation of Office Premiums for Industrial Life Assurances is treated by Mr. James Bacon, F.I.A., in the next chapter.

By way of introduction to this subject we may quote the words of a former Editor of this work. He said:—

"Of the various kinds of premiums in general use, all or nearly all may be traced to one of three main divisions, viz.: Single Premiums, Annual Uniform or Level Premiums, and Natural Premiums. These again are divided into two classes, Net or Pure Premiums and Gross or Office Premiums, the latter being obtained from the former by the addition of a sum sufficient in amount to provide for expenses and other contingencies.

"Single premiums consist of payments made in a lump sum to secure the benefit of life assurance either at death, or at the end of a stipulated period, or during a term of years, or on the failure of some contingency, their amount varying according to the age at entry and the particular description of benefit which they are designed to secure. The Mortality Table and Rate of Interest upon which they are to be based having been first determined, it is only necessary to ascertain the different amounts which will, according to the basis selected, provide for the contingency of the sum assured becoming payable in the first and each of the following years of assurance up to the end of the term. The total of these different amounts represents the single premium.

"From the single premium thus calculated it is an easy matter to find the corresponding Annual Level Premium, which is simply the amount of an annuity, payable in advance either during life or for a specified period, which the single premium will purchase.

"Natural annual premiums differ from level annual premiums in the fact that, since they are dependent upon the Rate of Mortality from year to year, they gradually increase in amount with the age of the life assured. At the younger ages they are much lower and at the older ages much higher than level premiums charged at the usual assuring ages. The natural annual premium may also take the form of a level annual premium combined with a diminishing sum assured, the principle upon which it is based, namely, that each year's premium only provides for that year's risk, remaining unchanged. Another distinction between level annual premiums and natural annual premiums is that whereas in the case of the former system evidence of good health is required only at the outset, in the case of the latter system it is required before the payment of *each* renewal premium. To place the two systems on equal terms in this respect it would be necessary to make an addition to the natural premium at every succeeding age to cover the option exercised by the assured at every renewal."

When the foregoing words were written certain crude forms of life assurance were being much discussed in connection with the operations of an *American Assessment Company* doing a considerable business in the United Kingdom, and of the *British Natural Premium Assurance Company.* Both of these offices have passed into oblivion and in doing so have demonstrated practically and expensively the inherent unsoundness of the natural premium system, which is based upon the very insecure foundation of reserves in the pockets of the policyholders instead of reserves in the coffers of the insurance company.

With the demise of these companies assessment assurance and natural premium assurance may be said to have received their *coup de grace* so far as this country is concerned. Therefore in this chapter we shall consider only assurances subject to uniform premiums. It will be sufficient for our present purpose to deal with Whole-Life and Endowment Assurances. Premiums for other and less important classes of policies are based on similar general principles although in the course of the calculations special points have to be taken into account.

The elements to be considered in the calculation are as follows:—

(1) Mortality: We have to make the best possible estimate of the future rates of mortality in each year of age. In order to do this we take an existing mortality-table prepared from the records of lives as similar as may be to those likely to be assured in future. Hitherto, mortality investigations have been very troublesome and, in consequence, there has been a disposition to undertake them at rather long intervals. Owing to modern progress in mechanical tabulation, etc., it appears likely that this defect will be overcome. Meanwhile, the mortality basis of premiums must necessarily be somewhat out of date. In any given case, however, an allowance could be made for this point by varying the loadings should such a course appear desirable.

(2) Interest: The rate per annum assumed must be one which we can reasonably reckon upon securing during the currency of the policy. It must be a *net* rate, *i.e.* a rate to be realized after allowing for probable income tax, delays in and cost of investment, etc.

(3) Loading: This is the addition to the pure or mathematical premium for the purpose of:

(*a*) Meeting the expenses of obtaining and administering the business.

(*b*) Providing for contingencies such as adverse fluctuation in the rates of mortality and interest.

(*c*) Providing Profits: to the participating policyholders in the case of a mutual office, to the participating policyholders and the shareholders of a proprietary office in agreed proportions, or to the shareholders only in the exceptional case of a proprietary company with no participating policyholders.

(4) Competition: Attention must be paid to the rates of competing offices. At the same time actuarial soundness is imperative and it does not follow by any means that because one Office quotes a certain scale of premiums another Office can afford to do likewise.

(5) Consistency: It is very important to secure a smooth graduation of the premiums from age to age and to avoid anomalies as between the rates for different classes of assurances. In this connection reference may be made to Moir, T.F.A., vol. 2, pp. 230/1.

A brief historical survey of the bases and methods of construction of office premiums in Great Britain will be a useful introduction to the consideration of modern practice. The earliest known table of office premiums for whole-life assurances at rates increasing with the age at entry was the original table of the *Equitable Society*, a mutual office founded in 1762 and still flourishing. The rates of this table, which were based on data derived from the London bills of mortality, gave place in 1781 to rates derived from the pure premiums of the Northampton Mortality Table at 3 per cent. interest, with a loading of 15 per cent. At the same time a bonus system was established which was the precursor of the various reversionary bonus systems which have since been adopted by many companies. In 1786 the 15 per cent. loading was removed, and pure Northampton 3 per cent. rates, without loading, were charged as the office premiums for participating assurances in the Society until the end of the nineteenth century. Many offices followed these rates, but in 1815 Mr. Milne published his celebrated Carlisle Mortality Table, calculated on sounder principles, and advocated that office premiums should be formed by adding a loading of 40 per cent. to the 4 per cent. Carlisle pure premiums. For the principal entry-ages (20 to 40) this basis produced lower office premiums than the Northampton 3 per cent. rates, but at the older entry-ages the position was reversed. The Carlisle rates soon became popular and were supported by Mr. Gompertz, the well known mathematician, who, in a paper read before the Royal Society in 1820, advocated the calculation of office premiums on a basis of mortality more in accordance with the actual experience of life offices and at a true average rate of interest, with adequate loadings for contingencies, profits and expenses. The influence of the Northampton 3 per cent. table, however, still remained and scales of office premiums were based upon it in various ways—for example, one office calculated its whole life with-profit premiums by deducting 5 per cent. from the Northampton 3 per cent. premiums for ages 20 to 50, the deduction being gradually reduced to zero at the higher ages.

In 1843, Mr. Jenkin-Jones, in his book on the "Seventeen Offices' Experience Table of Mortality (1837)," stated that at that time the mortality tables generally used were the Carlisle and the Equitable. The Equitable Mortality Table (which embodied the experience of the *Equitable Society*) was the first table of general utility deduced from the observation of assured lives. It was constructed by Mr. Griffith Davies in 1825, and brought up to date in 1829 by Mr. Morgan, the actuary of the Society.

The Seventeen Offices' Experience Mortality Table was derived from a more extensive experience of assured lives than had hitherto been obtained. Although employed by some companies as a basis for office premiums, it did not supersede the Carlisle Table because (1) at the principal entry-ages (20 to 40) it produced rates of premium differing little from those of that table, and (2) it failed to command confidence as regards the rates for the older ages at entry owing to the scantiness of the data at those ages.

The Carlisle Table held its own, in combination with various rates of interest and loadings, for a very long period although it was derived from limited local population data. Its influence waned, however, on the publication, in 1869, of the H^M (Healthy Male) Experience. This was derived from more extensive and reliable data than those previously available and rapidly superseded all other tables of mortality as the basis for the calculation of ordinary office premiums.

By way of illustration of the foregoing remarks, the following specimens of office premiums may be of interest.

Annual Office Premium for a Whole-Life Assurance of 100 (*with Profits*).

Age at Entry.	Equitable Society Original Rate, 1762.	Northampton 3 per cent. Pure Premium, without Loading.	Carlisle 4 per cent. Pure Premium, with 40 per cent. added.	Carlisle 3 per cent. Pure Premium, with 25 per cent. added.	Davies' Equitable 3 per cent. Pure Premium, with 25 per cent. added.	17 Offices' Experience 3 per cent. Pure Premium, with 25 per cent. added.
20	2·767	2·179	1·846	1·867	1·908	1·842
30	3·612	2·667	2·458	2·442	2·500	2·383
40	4·608	3·396	3·329	3·250	3·308	3·258
50	5·917	4·529	4·712	4·529	4·679	4·796
60	8·258	6·367	7·746	7·238	6·825	7·525

Of these rates the Davies' Equitable 3 per cent. pure premiums, with 25 per cent. added, approximate to average modern office premiums.

Inspection of tables of office premiums, published by Mr. David Jones in his book on the Value of Annuities, etc., in 1843, shows that, for participating assurances, several offices still charged Northampton 3 per cent. pure premiums, while others used Carlisle 4 per cent. pure premiums with 40 per cent. added. Average with-profit rates up to age 50 were much the same as corresponding modern rates, but average without-profit rates were substantially higher than those of the present day.

Originally, the loadings for expenses of management, commission and profit were expressed as a percentage of the pure premiums. In about the year 1850 it began to be recognized that the loading for expenses of management (apart from commission) was not measured accurately by a percentage on the premium, and should bear some closer relationship to the actual incidence of expenditure. It was not practicable to adopt the more nearly equitable method of making an equal charge on each policy (of whatever amount), since this plan would have imposed a prohibitive burden on the large class of policies assuring sums substantially below the average. It was suggested therefore, that the addition in question might be made by way of a percentage on the sum assured instead of on the premium. The necessary loading was to be deduced by dividing the total expenses of management of an office (apart from commission) by the total sums assured, and an addition to the pure premium of ·25 per 100 assured was suggested as a fair average amount to be used for all ages at entry. It is important to remember that in those days commission was a uniform percentage of each premium including the first and the loading for that item was taken as 5 per cent. of the office premium.

The loading for profits was provided by using in the calculation a pure premium at a rate of interest at least 1 per cent. lower than the average rate earned on the funds, with a further loading of 5 per cent. on the office premium.

Carlisle 4 per cent. pure premiums, loaded with a constant of ·25 per 100 assured and 5 per cent. on the gross premium, produced a satisfactory without-profit scale, and for the with-profit scale the Carlisle 3 per cent. pure premiums loaded with a constant of ·25 per 100 assured and 10 per cent. on the gross premium, produced office premiums very much the same as present average premiums at ages under 40, but rather lower at age 40 and upwards. It may also be noted that in his paper on the Uniform Reversionary Bonus System (*J.I.A.*, vol. xxxii, p. 341), Mr. Andras showed that if a similar loading were applied to the net premiums of the H^M Table the resulting with-profit rates would be very close to those calculated on modern bases by more precise methods.

The publication in 1869 of the H^M Experience led to more detailed and scientific methods of constructing office premiums and there were also, about that time, changes in office practice, etc., which necessitated a modification of the system of loading. We may conveniently summarize these changes and then proceed to consider them in some detail :—

Change affecting the Mortality Element :

The use of Select Rates.

Changes affecting the Loading Element:

(*a*) The introduction of relatively high initial commission.

(*b*) The employment of a specific rather than a general loading for profits.

As regards Mortality we may say that Select Rates are deduced not only with regard to age but also with regard to time elapsed since entry. For example, if we take a body of assured lives (each of whom was selected in the usual manner at entry and is exactly 35 years of age) and observe the mortality among them for one year, *without* regard to duration since entry, we obtain what is known as the Aggregate Rate. If now we divide the lives into groups according to duration since entry and measure the mortality of each section separately we get Select Rates. The lives are still all of the same attained age but the mortality rates are different owing to the varying durations. In practice it is not worth while to compute Select Rates for more than 10 years since entry at the most. Very often only 5 years are taken. After the expiration of this "select period" the mortality is regarded purely as a function of the age attained.

It is found that, for young entrants, pure premiums calculated from Aggregate Mortality Tables are less than those based on Select Tables, whereas at the later entry-ages the position is reversed. The reason is that, in the Aggregate Tables, fresh entrants at subsequent ages modify the mortality rates, whereas in Select Tables no such disturbing influence is admitted. At young ages there is still a very large flow of new entrants to come in and moreover there are comparatively few damaged lives. At the older ages there are few new entrants and many bad lives carried on from the past. Thus it follows that if the premium (which is simply the equivalent of a series of discounted probabilities of death in successive years of age) be based on an Aggregate Table a young entrant will gain and an older entrant will lose.

The famous actuary, Dr. Sprague, using the H^M data, investigated the mortality of assured lives during each of the first five years of assurance for each age at entry, and so deduced "select" rates of mortality which joined on to the rates of the $H^{M(5)}$ Table relating to lives assured for five years and upwards.

Thus he found it possible to assume that the effect of initial selection wore off in five years. These Select Tables were printed, with many derived monetary tables, by the Institute of Actuaries and were largely used for many years.

The following table of 4 per cent. pure premiums on several bases shows (1) that the Carlisle pure premiums, at the given ages, approximate closely to Sprague's "Select" pure premiums and (2) that the H^M pure premiums are too low at the younger ages and too high at the older ages.

Annual Pure Premium for a Whole-Life Assurance of 100 (*Interest 4 per cent*).

Age at Entry.	Carlisle.	Higham's Select Equitable Experience.	17 Offices' Experience.	H^M Aggregate.	Sprague's Select.
20	1·318	Not stated	1·295	1·244	1·391
30	1·755	1·79	1·697	1·669	1·714
40	2·375	2·40	2·368	2·352	2·361
50	3·364	3·51	3·578	3·542	3·488
60	5·532	5·39	5·755	5·715	5·541

Coming now to Loading we may mention that instead of allowing commission as a uniform percentage of each premium, Offices were beginning to pay more at the outset and less on renewals—a practice that has continued and developed ever since.

Moreover there was a growing tendency to issue participating policies for various classes of assurances other than the original whole-life class and this change necessitated the reconsideration of the method of loading for profits.

Bearing all these points in mind Dr. Sprague evolved a new formula for office premiums. Taking first the case of a non-participating whole-life policy for 100, he recommended the expression :—

$$\left[100\pi_{[x]} + \frac{1}{1+a_{[x]}} + \cdot 125\right] 1\cdot 075.$$

In this formula $\pi_{[x]}$ represents Sprague's Select 4 per cent. pure premium at age at entry x (the bracket round the age implying the use of a Select Table) for a whole-life assurance of 1 ; $\frac{1}{1+a_{[x]}}$ the provision by the same table of mortality and rate of interest for the initial commission of 1 per cent. on the sum assured distributed over life ; ·125 the portion of the annual expenses of management which may fairly be represented by a constant percentage of the sum assured and 1·075 the percentage loading covering (1) a commission of $2\frac{1}{2}$ per cent. on renewal premiums, (2) the portion of the annual expenses of management which may be more accurately represented by a percentage of the premium and (3) provision for adverse deviations from the assumptions made.

For with-profit whole-life policies under which simple or compound reversionary bonuses are allowed (one or other form of participation being adopted by the majority of British Offices), Dr. Sprague recommended that the premiums should be calculated in a similar manner, except that (1) $\pi_{[x]}$ would be increased by the annual loading for a "simple" or "compound" reversionary bonus, as the case might be, of say 1 per cent. per annum on the sum assured, and (2) the final percentage loading of 1·075 would be reduced to 1·05 (the loading of $2\frac{1}{2}$ per cent. for adverse deviations not being required in the case of a with-profit premium).

His formula thus became :—

$$\left[100(\pi_{[x]} + \text{bonus loading}) + \frac{1}{1 + a_{[x]}} + \cdot 125\right] 1 \cdot 05.$$

The resulting office annual premiums for a whole-life assurance of 100 are given in the following table to which have been added for purposes of comparison some premiums loaded by the older method previously mentioned.

Annual Office Premium for a Whole-Life Assurance of 100 (Select Mortality).

	Age at Entry.				
	20	30	40	50	60
Sprague's Select Office Premium, Without Profits	1·688	2·038	2·742	3·962	6·192
Do., With Profits, Loaded for a Simple Reversionary Bonus ...	2·029	2·438	3·202	4·479	6·721
Do., With Profits, Loaded for a Compound Reversionary Bonus	2·104	2·512	3·271	4·538	6·771
(Select 3 per cent. Pure Premium + ·25) × $\frac{10}{9}$, With Profits.	2·017	2·417	3·167	4·442	6·750

In illustration of the effect of using Aggregate instead of Select Mortality (to which we have already referred) we may now set out the corresponding Office Premiums on an Aggregate Mortality basis.

Annual Office Premium for a Whole-Life Assurance of 100 (*Aggregate Mortality*).

	Age at Entry				
	20	30	40	50	60
H^M Office Premium, Without-Profits, by Sprague's Formula	1·529	1·988	2·729	4·025	6·388
Do., With-Profits, Loaded for a Simple Reversionary Bonus ...	1·867	2·383	3·188	4·533	6·908
Do., With Profits, Loaded for a Compound Reversionary Bonus	1·950	2·462	3·258	4·596	6·954
(H^M 3 per cent. Pure Premium $+ \cdot 25) \times \frac{10}{9}$, Without Profits.	1·862	2·367	3·154	4·500	6·929

It will be seen that the rates are roughly identical on the two Mortality Bases at about age 40.

The use of a somewhat lower rate of interest (say 3½ per cent.) combined with a loading for a simple bonus produces premiums which are close to the corresponding 4 per cent. premiums loaded for a compound bonus. Some Offices which give compound bonuses have adopted this expedient.

In order to give students an idea of the addition to the annual pure premium on various bases which a reversionary bonus of 1 per cent. per annum of the sum assured requires, the following table (extracted from the paper by Mr. Andras abovementioned) is reproduced :—

ANNUAL BONUS LOADING FOR WHOLE-LIFE ASSURANCE OF 100.

(*a*) *Simple Reversionary Bonus.*

Age at Entry.	Sprague's Select 4 per cent.	H^M 4 per cent.	Sprague's Select 3½ per cent.	H^M 3½ per cent.
20	·364	·356	·416	·404
30	·427	·422	·473	·469
40	·501	·497	·545	·541
50	·579	·576	·618	·615
60	·645	·642	·678	·675

(*b*) *Compound Reversionary Bonus.*

Age at Entry.	Sprague's Select 4 per cent.	H^M 4 per cent.	Sprague's Select 3½ per cent.	H^M 3½ per cent.
20	·437	·433	·500	·491
30	·499	·496	·553	·551
40	·567	·565	·617	·615
50	·635	·636	·677	·676
60	·688	·685	·723	·721

It will be observed that a change in the rate of interest has much more influence upon these figures than has an alteration in the table of mortality. This feature is due to the fact that a change in the mortality-table produces two contrary results. Thus, if the mortality be increased, each unit of bonus costs correspondingly more but at the same time the total amount of bonus which will have to be provided is reduced.

In 1892 (*J.I.A.*, vol. xxx, p. 135) Mr. H. J. Rothery suggested a formula in which the provision for loading was made upon a different basis. He said:—

"The commission payable and some of the other charges are "now generally calculated upon the sum assured rather than "upon the amount of premium payable. The commission is "frequently 1 per cent. upon the sum assured, the stamp duty "and the medical fee partially depend upon the amount of the "policy, and the branch office expenses are implicitly if not "explicitly regulated in the same manner. On the other hand, "the amount of the first premium does have some influence upon "the expenditure. The following loadings were, therefore, "decided upon:—

"(1) In respect of the first premium 2 per cent. upon the "sum assured and 5 per cent. upon the gross premium.

"(2) In respect of each premium, including the first, 8 per "cent. upon the gross premium.

"The total loading therefore, amounted to 2 per cent. on "the sum assured, 13 per cent. upon the first premium, and 8 per "cent. upon the renewals. (It may be incidentally mentioned that "upon an average annual premium of £3 per cent, this amounts "to 80 per cent. of the first premium and 8 per cent. on renewals.)"

It should be noted that Mr. Rothery used the same mortality and interest bases as did Dr. Sprague.

Writing 100P for the office whole-life without-profit premium for an assurance of 100, Mr. Rothery's formula is as follows:—

$$100\text{P}=\left[100\pi_{[x]}+\frac{2+5\text{P}}{1+a_{[x]}}\right]\frac{1}{\cdot 92}$$

which reduces to

$$100\text{P}=\frac{100\pi_{[x]}(1+a_{[x]})+2}{\cdot 92(1+a_{[x]})-\cdot 05}.$$

The following table gives specimen rates by the two formulas:—

Annual Office Premium for a Whole-Life Assurance of 100 (*without Profits*).

	Age at Entry				
	20	30	40	50	60
Sprague's formula ...	1·688	2·038	2·742	3·962	6·192
Rothery's formula ...	1·633	1·992	2·712	3·967	6·262

It will be seen that in Mr. Rothery's formula the absence of the "constant" element for annual expenses and the prevalence of the "percentage" element have the effect of slightly lowering the premiums under age 50 and slightly increasing them above that age as compared with Dr. Sprague's premiums.

If, now, the over-all loading of 8 per cent. on the rates in Mr. Rothery's formula be reduced by 2½ per cent (on the basis that a margin for fluctuations is not necessary for with-profit policies) and the 4 per cent. loading for a compound reversionary bonus be added to the 4 per cent. pure premium, we get the following comparative with-profit premiums. The average amount actually charged by a number of Offices at the same period is also given.

Annual Office Premium for a Whole-Life Assurance of 100 (*loaded for a Compound Reversionary Bonus*).

	Age at Entry				
	20	30	40	50	60
Sprague	2·104	2·512	3·271	4·538	6·771
Rothery	2·050	2·458	3·242	4·533	6·825
Average Office Premium, of about the same period, of 15 Compound Reversionary Bonus Offices ...	1·979	2·467	3·238	4·512	6·929

Since these two formulas were evolved conditions have changed somewhat—a new mortality basis became available in 1903, the rate of interest fell continuously for a long period (although in recent years it has risen again) and the pressure of initial expenses has been intensified. It is necessary to consider these factors briefly.

In the British Offices Life Tables 1863-93 (published in 1903) the mortality of lives assured under with-profit whole-life policies was investigated separately from that of similar without-profit policies. The $O^{[M]}$, *i.e.* Offices Male Select, Table relates to the former class and the $O^{[NM]}$, *i.e.* Offices Non-Profit Male Select, Table to the latter class.

Specimens of the pure premiums on these and other bases appear in the following table :—

Annual Pure Premium for a Whole-Life Assurance of 100 (*Interest* $3\frac{1}{2}$%).

Age at Entry.	Aggregate.		Select.		Select.
	H^M	O^M	$H^{[M]}$	$O^{[M]}$	$O^{[NM]}$
20	1·330	1·204	1·471	1·265	1·364
30	1·769	1·677	1·814	1·671	1·788
40	2·465	2·400	2·477	2·329	2·486
50	3·667	3·597	3·618	3·424	3·669
60	5·848	5·733	5·681	5·295	5·743

The student should note :—

(*a*) The marked reduction at all ages shown by the O^M and $O^{[M]}$ rates as compared with the H^M and $H^{[M]}$ rates respectively.

(*b*) The comparatively high figures given by the $O^{[NM]}$ Table.

Note.—This feature is due to the admission into the non-participating class of persons who, on the average, proved to be inferior as regards longevity. It should be remembered that *in the past*, policies of this kind were issued largely for purposes of collateral security, etc., and that few persons assured on a without-profit basis as a means of family provision. Since the war, however, owing to the unfavourable bonus results, a large increase in without-profit business has occurred and much of it is undoubtedly of the best type. Consequently it does not follow by any means that a future investigation will show the same feature.

For whole-life with-profit premiums the most suitable mortality basis at present appears to be the $O^{[M]}$ Table.

It has been suggested that, in order to offset the heavy initial expenses, $O^{M(5)}$ Premiums should be employed. These premiums are deduced from rates of mortality which ignore the light claims of the early years of assurance and hence the rates are higher than Select rates. On this basis the new entrants would repay a large portion of the first year's expenses within two or three years of the issue of their policies. On the whole, however, it appears preferable to make direct provision for expenses in the loading.

There is considerable difference of opinion as to the net rate of interest which is likely to be earned on the average over a long period of years. A substantial rise has taken place in the average rate of interest secured during the last few years, partly from the fact that large sums have been written off on account of depreciation and partly from the fact that new investments have been made on very attractive terms. In the year 1870 the average rate earned, after deducting income tax, was about $4\frac{1}{2}$ per cent. By the year 1899 this yield had declined to $3\frac{3}{4}$ per cent. but it has since increased and the present net return (notwithstanding the much higher income tax) is over 4 per cent. per annum. It is important to note, however, that, owing to the marked change in financial conditions during the past few months, any further increase in the rate of interest is not likely unless there be a recession in prices. With 5 per cent. War Loan now (July, 1922) round about par the net yield to a purchaser is $3\frac{3}{4}$ per cent. after allowing for income tax at 5*s*. in the £, and would be 4 per cent. if the tax were reduced to 4*s*. in the £. It is true, of course, that Life Offices invest in many securities other than War Loan, and that they enjoy some mitigation of the rate of tax, but, nevertheless, the general statement holds good. It is no part of our present task to analyze the existing financial position and to prophesy as to future rates of interest—we have merely to point out that notwithstanding existing rates of interest many actuaries would adopt $3\frac{1}{2}$ per cent. as a basis for a new scale of premiums.

It has been suggested by one or two writers that a decreasing rate of interest might be employed. It is possible to give effect to this idea without making unduly complicated calculations, but the use of such a basis presupposes an ability to make a reliable forecast, not merely of the general trend of future rates of interest, but also of the manner in which the assumed fall is to take place.

In the case of with-profit assurances, the object of the actuary is to produce average rates and to provide good bonuses in relation thereto. The $O^{[M]}$ mortality basis enables him to employ a rate of interest of $3\frac{1}{2}$ per cent., to provide in the loading for an initial expenditure of 2 per 100 assured and yet to produce average rates of premium which, with economical management and skilled investment, should yield a satisfactory reversionary bonus.

The increase, from 1 per 100 to 2 per 100, of the loading for initial expenditure is desirable in view of the fact that many offices now have a graduated scale of commission in respect of the first year's premium, such scale commencing at 1 per 100 assured for small policies and increasing to 1·5, or even more, per 100 assured for large policies. Moreover, the cost of medical examination has increased.

The following formula shows the modification of Dr. Sprague's formula which Mr. Andras suggested, the pure premium and other functions being based on the $O^{[M]}$ Table with interest at $3\frac{1}{2}$ per cent.

$$\left.\begin{array}{r}\text{Annual Office Pre-}\\ \text{mium for a Whole-}\\ \text{Life With-Profit}\\ \text{Assurance of 100}\end{array}\right\} = \left[\begin{array}{c} 100\pi_{[x]} + \dfrac{2}{1 + a_{[x]}} + \cdot 125 \\ + \text{ bonus loading for a simple or compound} \\ \text{reversionary bonus, as the case may be, of} \\ \text{say 1 per annum.}\end{array}\right] 1\cdot 05$$

The following table shows some of the resulting rates (a simple reversionary bonus being assumed) together with the corresponding premiums of 4 typical British Offices in each of which the same bonus-system is in operation :—

Annual Office Premium for a Whole-Life Assurance of 100 (*with Profits*).

	Age at Entry				
	20	30	40	50	60
Andras's formula ...	1·979	2·483	3·262	4·517	6·588
Office A	1·975	2·492	3·288	4·562	6·933
Office B	1·925	2·446	3·242	4·554	6·842
Office C	2·008	2·450	3·233	4·542	6·867
Office D	...	2·446	3·229	4·533	6·825

If, for any reason, very low with-profit office premiums were required, it would be quite safe, having regard to the protection afforded by the profit-loading, to calculate them by a similar formula on the $O^{[M]}$ $3\frac{3}{4}$ per cent. basis.

Offices in specially favourable circumstances whether in relation to investments, selection of lives, economy of management, etc., can afford to charge rates of premium substantially below the average and yet produce satisfactory bonuses. To such cases the ordinary formulas will not apply without modification.

Objection may be raised to the use of 2 per 100 assured for the initial expenditure loading, inasmuch as this figure is greater than the office premium in certain cases—for example, at age 20. It should be noted however that provision is often made in a scale of commission for the limitation of the allowance in respect of the first year to some proportion (say 50 per cent.) of the premium. Any balance is paid when the second year's premium has been received. The formula assumes a distribution of the initial expenditure over the currency of the policy and if the Office spend more than the balance of the first year's premium after provision for the risk, it is, in reality, making an advance to the new member which must be recovered out of renewal premiums. In practice it is essential to limit this advance if good business is to be obtained on economical terms.

Mr. H. J. Rietschel, in a paper read before the Institute of Actuaries in 1910 (*J.I.A.*, vol. xliv, p. 415), discussed the problem of apportioning expenses and by analysis of the case of an Office whose general expense ratio was 15 per cent. of its premium income (a rate somewhat above the then average) he obtained the following results :—

	Initial Expenses.	Renewal Expenses.	
	Percentage on Sum Assured of cost of New Business.	Proportion treated as a percentage of the Sum Assured in force.	Proportion treated as a percentage of the Premium Income.
Expenses of Management	3·30	0·68	2·24
Commission ...	1·00	—	2·50
Total	4·30	0·68	4·74

On an O[M] 3½ per cent. basis and with loadings to provide a uniform simple reversionary bonus of 1 per cent. per annum of the sum assured, these figures for initial and renewal expenditure led to office premiums approximating to those of several first-class offices. Considerable modifications would be necessary in present conditions but no figures are available.

In Mr. Rietschel's analysis some of the cost of propaganda for obtaining new business was treated as initial expenditure. It might be held however that this outlay should count as renewal expenditure, its object being to lighten the general burden by distributing "fixed charges" over a larger volume of business. On that basis a working formula should include as initial expenditure only items immediately incidental to the placing of the business on the books, such as initial commission, medical fees and policy stamps.

As regards without-profit whole-life assurances considerable reductions of rates were made by many first-class Offices in the years preceding the War and even during the War. The pressure of increasing expenses, however, has caused certain Offices to increase their rates somewhat during the last two or three years. On the average, however, premiums are below those ruling ten years ago.

In calculating premiums for policies of this kind it is vital to remember that there is no safeguard such as the profit-loading affords in the participating class. The actuary has to try to deduce rates which while low shall also be safe. As a mortality basis the O[NM] Table of the British Offices Experience, which was derived from the mortality experience of a large body of lives assured on the without-profit scale, would naturally suggest itself were it not for the special features to which reference has been made already.

In deciding the question much must depend upon the type of life attracted to the Office and upon the stringency or otherwise of the selection. In these days many actuaries of first-class Offices would consider it quite safe to adopt the $O^{[M]}$ Table, with 3½ per cent. interest. Others would prefer to use the $O^{[NM]}$ Table. If the $O^{[M]}$ basis be used with loadings for expenses similar to those suggested by Mr. Andras in his with-profit formula the following figures result; the premiums charged by four British Offices are added for comparative purposes.

Annual Office Premium for a Whole-Life Assurance of 100 (without Profits).

	Age at Entry				
	20	30	40	50	60
Andras's formula as modified	1·556	1·992	2·697	3·869	5·874
Office E	1·546	2·000	2·733	3·954	6·046
Office F	1·538	1·925	2·621	3·792	5·796
Office G	1·550	1·996	2·733	3·983	6·192
Office H	1·496	1·942	2·671	3·908	6·079

In the case of an office whose business in the whole life without-profit section is chiefly connected with financial transactions such as loans on life interests and reversionary interests, involving the collateral security of life assurance, the $O^{[NM]}$ Table might be adopted as a mortality basis. In that case higher premiums would result unless the loadings were reduced for special reasons (such, for example, as the expectation of compensating profits arising from the financial business.)

Endowment Assurances form a most important class which is steadily gaining in popularity. Years ago a prejudice arose against them on the part of some actuaries owing to the fact that, from their very nature, they tended to supplant the profits accruing in the whole-life class from longevity and themselves yielded little mortality profit during their currency on the books. It has been shown, however, that the diminished mortality profit in the case of endowment assurances is generally compensated by the greater interest profit on the larger reserves. Statements of this kind are true only as regards offices charging average premiums for each class of policy and earning a satisfactory margin of interest. Assuming these conditions to hold good, office premiums for participating endowment assurances can be calculated on the same mortality basis and interest basis, with similar loadings for expenses and profits as for whole-life with-profit policies and it will be justifiable to declare the same rate of bonus in each class. In exceptionally favourable circumstances with regard to rate of interest earned and economy of management, a somewhat higher rate of bonus might be given to endowment assurances.

As to the mortality basis, the British Offices experience in this class shows mortality lighter than that of the whole-life with-profit section. The data, however, were scanty and it has been considered by many actuaries that the experience of the endowment assurance class is not a reliable guide in present conditions. Some have suggested that whereas, during the period (1863-93) covered by the experience, few persons took up endowment assurances and those who did so were influenced in their choice by the fact that they felt themselves to be better than average lives, now these policies are so popular that such personal selection must have ceased to have any appreciable weight. Whether this be so or not it is as well to bear in mind another important point, namely, that most of the endowment assurances observed were effected towards the end of the period. Seeing that during such period there is strong reason to believe that mortality rates diminished appreciably, it is only reasonable to expect that an experience largely concentrated in the later years should show better results than the whole-life class in which the policies were spread much more evenly over the term.

Bearing these considerations in mind and remembering also (as a minor, but practical, point) that the necessary tables based on the endowment assurance experience are not generally available, the conclusion is that the $O^{[M]}$ Table should be used. The following specimens have been calculated accordingly at 3½ per cent. interest with the loading suggested by Mr. Andras and with provision for a simple reversionary bonus. Corresponding rates are added in respect of Offices A, B, C and D, of which the whole-life with-profit premiums have been quoted already. These Offices allot the same rate of bonus to both classes.

Annual Office Premium for an Endowment Assurance of 100 (*with Profits*).

	Age at entry 30.		Age at entry 40.	
	Endowment Age		Endowment Age	
	50	60	50	60
Andras's formula ...	5·004	3·388	10·296	5·271
Office A	5·092	3·458	10·579	5·350
Office B	4·971	3·367	10·375	5·233
Office C	4·971	3·367	...	5·204
Office D	5·004	3·400	...	5·233

Endowment assurances without profits were formerly a small and unimportant class, but of late years they have become much more frequent.

The following table gives (*a*) rates deduced on the same basis as that used for the with-profit policies (the bonus-loading being omitted), (*b*) rates charged by the four Offices already mentioned :

Annual Office Premium for an Endowment Assurance of 100 (*without Profits*).

	Age at Entry 30.		Age at Entry 40.	
	Endowment Age		Endowment Age	
	50	60	50	60
Andras's formula ...	4·315	2·820	9·441	4·542
Office A	4·242	2·762	9·317	4·467
Office B	4·283	2·746	9·546	4·512
Office C	4·238	2·742	...	4·467
Office D	4·262	2·750	9·438	4·488

References to bonus-loadings hitherto have related only to those required for the more usual "simple" or "compound" reversionary bonus systems. There are, however, a few British offices which allow bonuses in cash either in the form of a percentage on the premiums paid during the valuation period, or by some "contribution" method in which the premium is an important element of the basis of allocation. In calculating the office premiums for participating whole-life and endowment assurances in such offices, the bonus-loading of the working formula used above should be replaced by an appropriate increase of the loading.

We have now dealt generally with the construction of office premiums for whole-life and endowment assurances and we have seen that the problem of satisfying theoretical considerations is extremely difficult of solution. It is suggested however that the modern formula deduced by Mr. Andras offers a reasonable compromise between the conflicting claims of theory and practice. Moreover, it brings out results which agree generally with the rates of typical British Offices.

In closing this chapter we may refer again very briefly to premiums for other types of policy. The calculation of single premiums and premiums ceasing after a specified number of years, of premiums for joint-life, contingent, temporary and children's assurances, etc., etc., involves the consideration of special points of a technical nature which are beyond the scope of this book. None the less the general principles apply whatever may be the precise form of the benefit to be assured and in building up his rates the actuary must have regard primarily to the considerations with which we have tried to deal.

LIST OF READING FOR THE USE OF ACTUARIAL AND OTHER STUDENTS WHO DESIRE TO PURSUE THE SUBJECT.

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CHAPTER V.

THE CALCULATION OF "INDUSTRIAL OFFICE" PREMIUMS.

By JAMES BACON, F.I.A.

INDUSTRIAL assurance may be defined for the United Kingdom as the assurance of a sum, payable in respect of any one person, of less than twenty pounds, the premiums or contributions being payable weekly.

This definition will include almost the whole of the business done by the collecting friendly societies, and by the industrial departments of those offices doing both "industrial" and "ordinary" business, but not quite the whole. A very small proportion of the total business done is at monthly premiums, and there is a growing demand for policies with weekly premiums where the sum assured is greater than £20. However, these larger assurances will form a practically negligible proportion of the total policies issued, and there will be no difference in the bases of calculation of the office rates.

During recent years, however, there have been serious attempts to induce the public to assure under policies carrying premiums payable monthly and in an Industrial Assurance Bill now (July 1922) under consideration the following definition occurs:—

"For the purposes of this Act 'industrial assurance business' means the business of effecting assurances upon human life the premiums in respect of which are received by means of collectors but shall not include:—

(*a*) Policies of assurance the premiums in respect of which are receivable at intervals of two months or more;

(*b*) Policies of assurance for £25 and upwards issued on and after the 1st day of July 1923 premiums in respect of which are payable at periodical intervals of one month or upwards and which are treated as part of the business transacted by the ordinary branch of the society or company."

There are certain exceptions covering existing policies but the main effect of the act if it is passed will be definitely to include in the Industrial Branch all policies for sums assured of less than £25 effected at monthly premiums.

The societies transacting industrial assurance business are of three types, viz. :—

Industrial assurance companies,
Collecting friendly societies,
Registered friendly societies and trade unions not coming within the scope of the Collecting Societies and Industrial Assurance Companies Act, 1896.

It will only be necessary to deal with the methods employed in the calculation of the premiums for the first two classes, as these will, on the whole, cover the methods employed for the very numerous societies in the third class in which the benefits are generally payable only on death, with the exception that in that class the office premiums are usually obtained by increasing the net premium by a fixed percentage.

There are four main factors in the calculation of "ordinary" premiums, viz. :—

1. Rate of mortality,
2. Rate of interest,
3. Rate of expense,

and, in the case of with-profit policies,

4. A loading for future bonuses.

Though in certain cases bonuses are given periodically in cash, or by the cessation of premiums on attainment of a given age, the policies issued by the industrial assurance companies and collecting friendly societies are nominally "without profits," so that the fourth factor does not enter into the calculation. There is, however, in some cases a further factor, viz. :—

5. Rate of withdrawal or lapse.

Rate of Mortality.—It is usual for friendly societies to base their premiums upon their own mortality experience, but, generally speaking, the table of mortality employed by companies is that known as the "English Life Table, No. 3 (Males)," which is based on the census returns of England and Wales for the years 1841 and 1851, and the deaths for the seventeen years 1838 to 1854.

The English Life Table, No. 3 (Males) was no doubt used in the first place as it was the most convenient, owing to the number of functions based upon it which had been calculated and published, but that it no longer represents the experience of the general population is shown by Tables 1 and 2, in which are set forth, at every fifth age, the expectations of life and rates of mortality of male lives according to English Life Tables No. 3, 6 and 8. The English Life Table, No. 6, is based upon the census returns of England and Wales for the years 1891 and 1901, and the deaths for the ten years 1891 to 1900, whilst No. 8 is based upon the census return for 1911 and the deaths for the years 1910-1912.

TABLE 1.

Rate of Mortality according to English Life Tables, No. 3, 6 and 8 (Males).

Age.	No. 3.	No. 6.	No. 8.	Age.	No. 3.	No. 6.	No. 8.
0	·18326	·17186	·12044	55	·02485	·02558	·02111
5	·01369	·00746	·00489	60	·03305	·03581	·03042
10	·00563	·00244	·00193	65	·04698	·04963	·04375
15	·00519	·00310	·00235	70	·06962	·07248	·06470
20	·00832	·00460	·00348	75	·10391	·10250	·09751
25	·00920	·00553	·00400	80	·15290	·15523	·14299
30	·01013	·00685	·00478	85	·21966	·23078	·19911
35	·01133	·00903	·00624	90	·30717	·31800	·27395
40	·01306	·01180	·00811	95	·42035	·43860	·31564
45	·01554	·01475	·01089	100	·55000	·64066	·41605
50	·01902	·01936	·01482				

TABLE 2.

Complete Expectation of Life according to English Life Tables, No. 3, 6 and 8 (Males).

Age.	No. 3.	No. 6.	No. 8.	Age.	No. 3.	No. 6.	No. 8.
0	39·91	44·13	51·50	55	16·45	15·79	16·89
5	49·71	53·50	57·14	60	13·53	12·93	13·78
10	47·05	49·63	53·08	65	10·82	10·34	10·99
15	43·18	45·21	48·57	70	8·45	8·05	8·53
20	39·48	41·02	44·21	75	6·49	6·15	6·49
25	36·12	37·01	40·00	80	4·93	4·62	4·90
30	32·76	33·07	35·81	85	3·73	3·45	3·72
35	29·40	29·24	31·71	90	2·84	2·58	2·87
40	26·06	25·64	27·74	95	2·17	1·95	2·43
45	22·76	22·20	23·92	100	1·68	1·51	1·61
50	19·54	18·90	20·29				

The war has had a very disturbing effect on mortality at all ages, but, from information I have received, I have no doubt that the *general* experience of the offices has followed the same trend as that of the general population, and that the rate of mortality at the younger ages has become considerably lighter, and at the older ages somewhat heavier, than that shown by the English Life Table, No. 3, and is, on the whole, fairly well represented by the English Life Table No. 6—though if a male table is adopted for a mixture of Male and Female lives, No. 8 would now be better.

The mortality amongst females is lighter than amongst males, and particularly so at the older ages, and as assurances upon female lives form a very large proportion of the whole (this proportion in some offices reaching nearly 50 per cent.), their inclusion has tended to counteract the departure from the standard adopted, viz., English Life Table, No. 3 (Males), which is shown by the increasing rates of mortality at older ages experienced in recent years, and which is referred to later.

There is no doubt that individual offices vary very considerably in their mortality experience of industrial assured lives, and that this variation is considerably greater than would be found in "ordinary" business owing to the absence of medical examination with its comparatively rigid standards. The acceptance of business is mainly influenced by outside officials who are *directly* interested in obtaining as large a volume as possible and only *indirectly* in securing a high standard of quality. All reputable offices exercise considerable care in selecting the business submitted to them, both by local tests and by strict supervision at the chief office, but the requirements of individual offices vary, both as regards the quantity and quality of the business demanded from their representatives. It is, therefore, inevitable that there should be large differences in the rates of mortality experienced, and this is accentuated by differences in the distribution of the business as regards rural districts and different industrial centres with varying health conditions.

There are certain exceptions to the general use of the English Life Table No. 3—the $O^{M(5)}$ Table of the British offices, or the actual past experience of the particular office being substituted in some cases, whilst in many others the rates have been arbitrarily altered from time to time so that very little importance, if any, attaches to the use of the same standard table originally.

It is the custom to use the same mortality table for all classes of assurance, but it is conclusively shown, where the mortality of different classes has been investigated, that variations are found in industrial business similar to those met with in ordinary business, and that the mortality amongst both infants and adults is considerably better where the assurance is effected under an endowment or endowment assurance table than where it is effected for the whole of life. It is also found that the mortality experience in connection with joint life assurances is better than that of single lives, though, as far as the author's information goes, it is not quite so good as that of persons effecting endowment assurances. This is what would naturally be expected, as the selection against the office is obviously not so great as where single-life policies are effected.

The considerable change in the mortality experience of industrial assured lives (previously referred to) is still being experienced by some offices, if not by all, and is resulting in a still lighter mortality up to about age 50, and a heavier mortality thereafter. During the war there was a marked increase in mortality at the older ages, followed since by the reverse. How far this is likely to be permanent it is at present impossible to say. These changes may be due to a change in the incidence of mortality generally or to changing conditions of business, or to both. It is certainly the case that supervision has for some time past been more rigid than formerly, and that it is becoming increasingly so. This has undoubtedly been very effective in reducing mortality.

By the Assurance Companies Act, 1909, collecting societies and industrial assurance companies may issue policies to one person on the life of another where the assurance is for the funeral expenses of a parent, grandparent, grandchild, brother or sister of the assurer. Where no legal interest exists the difficulty is constantly met by the proposer obtaining a policy on his own life and immediately assigning it to a third party. It was formerly the practice of some companies to give a reduced sum assured where the assurance was not "own life"—the reduction amounting in some cases to as much as 22 per cent.—and in other offices the maximum sum assured was limited, as it was recognised that in such cases the selection against the office was very strong.

Since the passing of the above-mentioned Act, there is, I believe, only one British company which differentiates between "own life" and "life of another" cases, but policies which are assigned shortly after issue are most carefully investigated, and if there is sufficient evidence to show that the transaction is not perfectly *bonâ fide*, the policy is cancelled and the premiums are returned.

The element of selection, which plays so important a part in "ordinary" business, is experienced in industrial business to a certain extent. Where there is no medical examination the lives proposed are usually visited and reported upon by a "tester," whose function it is to eliminate those who, by reason of some defect of health or habits which may be revealed by interview and enquiry, or by reason of unsuitable surroundings, are deemed bad risks; and in special cases and districts it is not uncommon to supplement this selection by a "medical test," in which no medical examination takes place, but the life proposed is interviewed by the medical referee who reports on the case from a superficial enquiry. In addition, the chief office exercises a close supervision, and it is not unusual to form proscribed areas or streets in certain towns and to accept no proposals upon the lives of persons resident therein.

Practically all offices provide that (save as undermentioned) only one-quarter of the full sum assured shall be paid in the event of death within three calendar months of the issue of the policy, and one-half in the event of death after three months but within six months, and this acts as a further check on bad lives. Full benefit is paid in the event of death after the policy has been six months in force, or at any time in the event of death by accident. The maximum sum assured which may be secured without medical examination varies very considerably with the different companies, but in no case does it exceed £40. This maximum applies to persons under 40 years of age and it is reduced by stages to about £10 where the age at entry is 60 or over.

Selection *against* the office is very much more effective in industrial than in ordinary business, and in more than one experience within the author's knowledge, in spite of all precautions, the rates of mortality at the same age passed through were observed to decrease up to a point as the duration of the policies observed increased. The more recent entrants were thus, on the average, worse lives than those of longer duration in spite of the much stronger selection against the office by withdrawal than is experienced with "ordinary" insurance. If a person, assured under an industrial policy, finds it difficult to pay the premium and is in good health, the policy will probably be lapsed, especially if it has not been in force for very many years, but if his life has in any way deteriorated, he will do his utmost to keep the policy in existence, and in the alternative he will easily be able to sell it to some person who is willing to buy it as a speculation. Nearly all offices increase the sum assured after the policy has been five years in force, and again after it has been ten years in force. This serves not only to counteract to some extent the heavy adverse selection experienced at the outset, but also to reduce the element of lapse.

Rate of Lapse.—Closely analagous to the rate of mortality, and of very considerable effect on the net premium for a given age at entry, is the rate of lapse.

The experience of certain English industrial assurance companies as to the combined effect of lapse and mortality was investigated in 1904 by Mr. T. G. Ackland and the present writer, it being assumed that the mortality experience was that shown by the English Life Table No. 3 (Males). It is thought that the resulting secession experience is fairly representative, and the very marked effect of the lapse element is shown in Table 17, p. 597, of vol. xxxviii. of the *Journal of the Institute of Actuaries*, where rates of premium are given on various assumptions as to lapse.

The lapse element has not the same stability as has the element of mortality, and is subject to the influence of a variety of forces, which do not affect this latter, but it has far greater effect on the rate of decrement, especially in the earlier years of assurance. Its relative importance will, however, depend to a very considerable extent upon the surrender values allowed, and the initial expenses attaching to the issue of a policy. Where, as in many friendly societies, insignificant surrender values are allowed, and no profits are divided, I see no great objection to the inclusion of the lapse element in calculating premiums, provided proper care is exercised, and, on the other hand, where, as occasionally happens, the surrender values are larger than the valuation reserves, it seems highly desirable that it should be included, the surrender value being treated as a benefit payable on lapse in exactly the same manner as the sum assured payable at death. Where, however, the surrender value is a high percentage of the valuation reserve the lapse element may be ignored, and any profit derived therefrom allowed to fall into the general profits of the business. With one or two exceptions, this is the course adopted by British offices.

Rate of Interest.—The rate of interest earned on the funds of "industrial" offices in the years immediately preceding the war averaged about £3. 15*s*. for friendly societies, and a little less for industrial assurance companies, but of course much higher rates are now being obtained, either by the investment of new money or by the writing down of old securities. The powers of investment of friendly societies are limited by statute, but these societies have the considerable advantage of being exempt from the payment of income tax. Though, under present conditions, there is no need to provide a "profit" margin of interest, it is thought that a rate of interest not exceeding 3 per cent. per annum should be assumed for the calculation of office premiums, at any rate for whole-life assurances. Judging, however, from past experience and from the higher rates earned by the investment of the "ordinary" funds, there seems every reason to believe that a rate more closely approximating to 4 per cent. will be obtained with all reasonable security over a considerable period.

Expenses of Management.—Probably the most difficult factor in the calculation of industrial premiums is the expenses of management. In most collecting friendly societies, these are limited by the rules, and, in the following table, are shown the provisions made by the chief societies in respect of whole-life assurances:—

Society.	Percentage of Premium.	
	First Year.	Second and following Years.
A	75	45
B	85	37½
C	85	40

Taking the most recent available figures of institutions having an annual premium income of £100,000 or more, the proportion of expenses and commissions to total premium income varies—for friendly societies—from 43·1 per cent. to 47·4 per cent., with an average of 44·0 per cent., while—for companies—it varies from 36·9 per cent. to 60·5 per cent. with an average of 41·2 per cent. If we exclude one company which has approximately half the total premium income, the variation is from 39·4 per cent. to 60·5 per cent. with an average of 45·05 per cent.

This percentage is, of course, considerably influenced by the amount of new business being written, and by the collecting commission paid to agents and canvassers, which varies a great deal. One company, for example, pays approximately eighteen times the weekly premium on new business, less lapses, and a sliding scale for collection which may be as low as $12\frac{1}{2}$ per cent. of the total premiums collected. Another pays ten times the weekly premium on all new business and 25 per cent. of the total premiums collected.

It is impossible to calculate exactly the relative allocation of expenses as between the first and subsequent years, and the conditions of employment in the business are at present in a state of flux, but, on the average, there will be little error in the convenient assumption that the expenses during the first year of the existence of a policy are approximately four times those of subsequent years, and that, generally speaking, 120 per cent. of the first year's collections, and 30 per cent. of those for subsequent years are absorbed. It is not improbable, however, that new legislation may have the effect of producing considerable changes in expense rates and in the premiums charged. As the commissions to agents (and, to a very great extent, the remuneration to inspectors, superintendents and branch officials) form a fixed percentage of the premium income, whilst the fixed expenses per policy, or those varying with the sum assured, are practically negligible, the loading for expenses should be calculated as a percentage of the premium for the first and subsequent years.

In the following paragraphs, it is assumed that, unless otherwise stated, the formulas given will be used with interest at 3 per cent, per annum, and that the mortality adopted will be that of the English Life Table No. 6 (Males).

It is usual in Great Britain to quote, in industrial prospectuses, the sum assured which will be given for a weekly premium of one penny, and that is the course now adopted. In some cases the prospectus also shows the weekly premium required at each age for a fixed sum assured. This not infrequently leads to discrepancies between the two tables, as it is possible to give effect to much smaller changes when sums assured, rather than weekly premiums, are the basis of quotation, and therefore it seems undesirable to publish both sets of figures.

Whole Life Assurances.—It is suggested that, in calculating the sums assured during the whole of life for a weekly premium of 1*d.*, the following formula should be used :—

$$\text{S.A. at age } x = \frac{\cdot 2174 \times \cdot 7}{\bar{P}_{[x+2]}} = \frac{\cdot 1522}{\bar{P}_{[x+2]}} .$$

This formula assumes that the mortality and expenses will absorb the whole of the premiums collected during the first two policy years, and that the element of secession may be ignored after that period. Continuous functions have been used, as the sum assured is usually paid within one week after the notification of the claim, and the full 52 weeks and 1¼ days in the average year have been taken into account.

In the subjoined table are set forth the highest and lowest sums assured given by the larger industrial assurance companies and collecting friendly societies respectively. For purposes of comparison, the rates based on English Life Tables No. 3 and 6 (Males), by the proposed formula, with interest at 3 per cent., have been added, and they well illustrate the changes produced by the changing conditions of mortality.

TABLE 3.

Age.	Companies.		Societies.		English Life Table No. 6. (Males).	English Life Table No. 3. (Males).
	Highest.	Lowest.	Highest.	Lowest.		
	£ s.	£ s.	£ s.	£ s.	£ s. d.	£ s. d.
11	12 10	10 15	11 12	11 0	12 12 6	10 19 8
20	10 0	8 9	9 2	8 18	9 9 3	8 12 5
30	7 12	6 7	7 0	6 17	6 15 8	6 12 7
40	5 9	4 11	4 18	4 15	4 14 11	4 16 10
50	3 10	3 2	3 6	3 0	3 3 6	3 6 4
60	2 4	1 18	2 1	1 17	1 19 10	2 2 0
70	1 5	1 0	1 3	1 0	1 3 1	1 4 5
80	0 14	0 12	0 12	0 11	0 11 11	0 13 8

In calculating the sums assured by the English Life Tables, no allowance has been made for the reduction during the first ten years. This would slightly increase the maximum amount, the variation being approximately 2*s.* for age at entry 20, 1*s.* for age 30, and 5*d.* only for age 40.

In certain offices, the premiums payable under whole-life contracts cease when the assured attains age 75, provided the policy has been 25 years in force, or otherwise on the later completion of the twenty-fifth policy anniversary. The effect on the cost of the assurance is comparatively slight, and whilst the formula should be suitably modified in the case of a weak office, a strong one would probably find this unnecessary and could afford to treat the extra benefit as a bonus to the assured to be provided out of the profits of the business.

Infantile Assurances.—The sum assured, payable on the death of a child where no legal insurable interest exists, is limited by statute to £6 where death takes place under age five, and to £10 where it occurs after five but under ten. It is the general practice

TABLE 4.

Age next Birth-day.	Sums Assured for 1*d.* per Week after the Policy has been in Force: Three Calendar Months.	Six Calendar Months.	One Year.	Two Years.	Three Years.	Four Years.	Five Years.	Six Years.	Seven Years.	Eight Years.	Nine Years.	Ten Years.	Maximum.	Age.	Sum Assured for One Year for a net Premium of 1*d.* per Week, English Life Table No 6 (Males).
	£ s.	£ s.	£ s.	£ s.	£ s.	£ s.	£ s.	£ s.	£ s.	£ s.	£ s.	£ s.	£ s.		£ s. d.
1	* 3 0	6 0	6 0	6 0	6 0	6 0	10 0	10 0	10 0	10 0	10 0	12 10	13 0	0	1 5 3
	† 1 5	2 10	3 0	3 10	4 0	4 10	5 0	6 0	7 0	8 0	9 0	10 0	10 15		
2	* 3 0	6 0	6 0	6 0	6 0	10 0	10 0	10 0	10 0	10 0	12 10		13 0	1	4 1 9
	† 1 10	3 0	3 10	4 0	4 10	5 0	6 0	7 0	8 0	9 0	10 0		10 15		
3	* 3 0	6 0	6 0	6 0	10 0	10 0	10 0	10 0	10 0	12 10			13 0	2	10 10 4
	† 1 15	3 10	4 0	4 10	5 0	6 0	7 0	8 0	9 0	10 0			10 15		
4	* 3 0	6 0	6 0	10 0	10 0	10 0	10 0	10 0	12 10	12 10			13 0	3	16 5 8
	† 2 0	4 0	4 10	5 0	6 0	7 0	8 0	9 0	10 0				10 15		
5	* 3 0	6 0	10 0	10 0	10 0	10 0	10 0	12 10	12 10				13 0	4	22 8 3
	† 2 10	4 10	5 0	6 0	7 0	8 0	9 0	10 0					10 15		
6	* 5 0	10 0	10 0	10 0	10 0	10 0	12 10	12 10					13 0	5	29 2 10
	† 3 0	5 0	6 0	7 0	8 0	9 0	10 0						10 15		
7	* 5 0	10 0	10 0	10 0	10 0	12 10	12 10						13 0	6	37 18 10
	† 3 10	5 0	7 0	8 0	9 0	10 0							10 15		
8	* 5 0	10 0	10 0	10 0	12 10	12 10							13 0	7	49 8 0
	† 4 0	5 0	8 0	9 0	10 0								10 15		
9	* 5 0	10 0	10 0	12 10	12 10								13 0	8	63 0 4
	† 4 10	5 0	9 0	10 0	10 0								10 15		
10	* 5 10	10 0	12 10	12 10	12 10								13 0	9	77 1 11
	† 5 0	5 0	10 0	10 0	10 0								10 15		

* Highes[illegible]ured. † Lowest Sum Assured.

to give a sum assured which increases every three months for the first year of assurance and yearly thereafter, until the maximum sum assured (for age at entry eleven next birthday) is reached. No two companies give exactly the same benefits, and the progression of the sums assured varies very widely.

Except at ages 0 to 2, the net premium for a term of one year required by the English Life Table No. 6 (Males), to secure the maximum sums assured allowed by the law never exceeds $37\frac{1}{2}$ per cent. of the standard premium of 1*d*. per week. The rates of sum assured quoted are arrived at, more or less arbitrarily, from a consideration of the rates of mortality of the English Life Table No. 3. They are so arranged as to allow for the exceptional mortality at these young ages, and to give the office the greatest protection possible against adverse selection, whilst removing so far as may be the possibility of profit to the assured arising from the death of the infant. In practically every case, the sums assured are far too high during the first year and especially during the first few months of life, the losses during this period being made good at the succeeding ages. Table 4, which gives the maximum and minimum sums assured allowed by the larger offices, and also the sum assured for one year for a net premium of 1*d*. per week by English Life Table No. 6 (Males), will sufficiently illustrate my point.

Adult Endowment Assurances.—There is not a great deal of business transacted at weekly premiums in this class of assurance, most industrial offices catering for it at monthly premiums which allow of a considerably lower charge for commission and expenses. The following formula for the sum assured for 1*d*. weekly is based on the same assumptions as to expenses as were made in the case of whole-life assurances:—

$$\frac{\cdot 7 \times \cdot 2174}{\bar{P}_{[x+2]\,\overline{n-2|}}}.$$

The resulting sums assured are given in the following table:—

TABLE 5.

Age next Birthday.	Term. 15 Years.	20 Years.	25 Years.	30 Years.
	£ s. d.	£ s. d.	£ s. d.	£ s. d.
11	2 5 4	3 8 6	4 12 1	5 17 0
20	2 5 10	3 6 5	4 7 10	5 9 6
30	2 4 5	3 3 0	4 1 2	4 18 0
40	2 2 2	2 19 10	3 11 6	4 2 1
50	1 18 3	2 9 5	2 17 1	—

The sums assured given above are somewhat higher than the average sums assured allowed by British offices. These are represented fairly well, on the whole, by the sums assured calculated by the formula given but using English Life Table No. 3 (Males), with interest at 3 per cent. As a matter of interest the premiums on this basis are set forth in the following Table 6:—

TABLE 6.

Age next Birthday.	Term.			
	15 Years.	20 Years.	25 Years.	30 Years.
	£ s. d.	£ s. d.	£ s. d.	£ s. d.
11	2 5 8	3 8 0	4 7 4	5 9 1
20	2 4 6	3 3 7	4 3 1	5 2 3
30	2 3 8	3 1 7	3 19 0	4 15 0
40	2 2 0	2 17 8	3 11 7	—
50	1 18 9	2 10 6	—	—

Pure Endowments.—Several offices issue pure endowment policies at weekly premiums with a return, in the event of death before the endowment matures, of a proportion of the premiums paid. The commissions payable are comparatively light, approximating to the first four weekly premiums collected and 10 per cent. on subsequent collections.

The terms of such endowments usually being very short, fair average premiums are obtained by assuming that expenses will absorb 15 per cent. of the premiums, no provision being made for mortality and $3\frac{1}{2}$ per cent. interest being assumed in the calculations. The sum assured in £ payable at the end of n years for 1*d.* weekly is given by the formula $\cdot 185 \bar{s}_{\overline{n|}}$.

This formula does not give effect to the heavier expenses of the first year, and it is apparent, on investigation, that some rates charged are based on the assumption that expenses will absorb the whole of the first year's premiums and 10 per cent. of renewals, interest being taken at $3\frac{3}{4}$ per cent. The effect of the formula given is to produce somewhat lower sums assured for terms up to 17 years and higher sums assured thereafter.

Children's Endowment Assurances are sometimes issued. They give a sum assured increasing until the attainment of the tenth birthday or, in some cases, until the attainment of the policy anniversary succeeding the tenth birthday, with a constant sum assured thereafter, payable on attainment of a given age, usually age 14, or previous death.

The sum assured for a fixed weekly premium will be found by accumulating the premiums, less expenses, at compound interest until age 10 and treating this as the single premium for an endowment assurance to mature at age 14. The sum assured so found, added to that secured by the weekly premium payable from age 10 till the date of maturity, will give the full ultimate sum assured. This ignores mortality below age 10, but it does not affect the rates by more than about 1 per cent. The commissions payable for collection are materially less than those for whole-life assurances. In most cases, it will be sufficient to assume that the first year's collections will cover the cost of expenses and mortality for that year, and that the expenses of subsequent years will not exceed 20 per cent. of the premiums.

The sums assured on this basis, assuming interest at 3 per cent., will be found to agree on the whole with those usually charged, although in one case it would appear that only 20 per cent. of *all* premiums, including those of the first year, is allowed for expenses. The sum assured in £ on the basis suggested for 1*d*. per week will be given at age x at entry by the formula

$$\frac{\cdot 17393\,\bar{S}_{\overline{9-x}|}}{\bar{A}_{10\,\overline{4}|}} + \frac{\cdot 17393}{\bar{P}_{10\,\overline{4}|}}.$$

Children's Endowment Assurances with Options.—In certain cases, a similar increasing sum assured is given until the attainment of the policy anniversary succeeding the tenth birthday, the sum assured then remaining constant until age 21. At that age the option is given of taking the sum assured in cash or of continuing the weekly premiums and maintaining the policy in force, either for the whole of life or as an endowment assurance payable on attainment of certain specified ages, the sums assured, of course, varying with the option chosen. The amounts of the cash options given at age 21 differ considerably, those of one office exceeding those of another, in an extreme case, by as much as 35 per cent. of the latter, and, where other options are allowed, the same discrepancies appear. The author suggests as a working formula, which will produce average results and be consistent with the premiums charged for other classes of assurance, that the first year's collection shall be allocated to the mortality and expenses of that year, and that 30 per cent. of collections for subsequent policy years shall be set aside for expenses.

For the very young ages at entry it might be advisable, in order to meet competition, to modify the formula so as to allow for the period between the date of entry and the next birthday. This is usually almost a full year at age one next birthday (at which most of the business is written) and it reduces as the entry age increases.

In the calculation of the options at age 21, the cash option at that age may be treated as a single premium for the purchase of a definite sum assured under the option chosen, with no allowance for expenses. The balance of the sum assured is secured by the continued premium, allowing 30 per cent. of that premium for expenses. As with other classes of assurance, it is assumed that the English Life Table No. 6 (Males) will be used with 3 per cent. interest.

It should be noted that, where premiums are payable weekly, the fraction of a year between the date of entry and the attainment of the next birthday is of importance, especially in the case of short term endowments. The author has assumed throughout that entrants come in at an exact age, but it is evident on investigation that several offices make allowance in their calculations for the odd fraction of a year.

Joint Life Assurances.—These are usually effected more in the middle of life than are whole-life assurances, and are free, to a great extent, from the speculative elements that tend to increase the mortality of the latter. On the whole, it will probably be found that, in a well-managed company, the mortality is better even than that shown by the English Life Table No. 6, and approximates to that experienced for endowment assurances, though probably a trifle higher. For the calculation of office premiums, it is suggested that the same provision for expenses should be adopted as for whole-life assurances, viz., the first two years' premiums to cover expenses and mortality, and 30 per cent. of subsequent collections. The formula for the sum assured for 1*d*. per week would thus be :—

$$\frac{\cdot 1522}{\overline{P}_{[x+2:x+2]}}.$$

This formula produces fair average sums assured after about age 35, but below that age they are higher than those given by most offices.

Extra Premiums.—Practically speaking, the question of extra premiums does not arise in connection with industrial assurance. The numbers assured are so great and the effects of selection so limited, that, taking these in conjunction with the smallness of the average sum assured, it is felt that the mortality experience will be practically unaffected by the inclusion of persons engaged in trades which would entail an extra premium for ordinary assurance. It is the practice of one or two institutions to exclude altogether persons engaged in certain trades, but this is quite exceptional, the only trade calling generally for special treatment being that of publican. Practically every office either excludes persons engaged in the sale of intoxicating liquors or reduces the sum assured for the standard premium of 1*d*. per week, the reductions ranging from 10 per cent. to 25 per cent., whilst it is usual to limit the sum which will be assured without medical examination.

No reduction of the sum assured is made in respect of female lives, and this would appear to be amply justified by their mortality experience, which is better than that of males.

As already pointed out, the number of industrial institutions of first-class importance is very limited, and each institution is a law unto itself in regard to nearly every factor which enters into the calculation of office premiums. It is, therefore, very difficult to lay down bases or formulas for general adoption. The variation in mortality, expenses, lapses and even in the rate of interest earned on the invested funds, is very great indeed—far more so than is the case with offices doing ordinary business only—and I have only been able to give some general indication of the trend and effect of these factors, and of the bases which might be reasonably and safely adopted by an average industrial institution.

NOTE.—Apart from any references in the text, it is not practicable to supply suggestions as to further reading.

CHAPTER VI.

RESERVES, SURRENDER VALUES, LOAN VALUES, AND PAID-UP POLICIES.

By R. C. Simmonds, F.I.A.

It is the purpose of this chapter in the first place to discuss the reserves which life offices hold in respect of their policies and in the second place to consider the technical (as distinct from the legal) questions which arise when applications are made for surrender values, loan values and paid-up policies.

For reasons which have been explained in Chapter IV. life assurances generally are granted on the basis of level annual premiums. It is true that in some cases policies are subject to reduced premiums for the first few years but these contracts are few in number and they do not embody in any way the unsound principles of assessmentism.

Although the premium paid each year under an ordinary life policy is constant, the risk which such premium is designed primarily to cover—viz., the risk of death—is not constant. It increases from year to year throughout life after the early infantile period has been passed. The following table illustrates this fact very clearly :—

Age attained.	Approximate proportion of persons dying before one year has passed.
20	½ %
40	1 %
60	3 %
80	14½ %
100	75 %

When we consider these two facts together we see at once that the association of a level annual premium with a risk of death increasing from year to year must mean that at first the amount paid by the assured is more than sufficient to cover the chances of a claim, whereas in the later years the position will be reversed. Thus, according to the H^M Table with interest at 3½ per cent. the pure annual premium for a whole-life assurance payable on the death of any one of a group of persons each aged 30 at entry is 1¾ per cent. Quite apart from the effect of interest, which need not be considered for the purpose of the present argument, it is clear that a portion of each of the premiums paid during the early years will remain in the hands of the office after the claims have been met. These unabsorbed portions of premium duly accumulated with compound interest form the theoretical reserve, and unless they are so accumulated the office will be unable to fulfil its obligations as they mature. First-class British offices hold such large sums in relation to their bare liabilities that, from one point of view, they may be regarded also as having a reserve akin to that which an ordinary trading company maintains as a precautionary measure, but such reserve is not the whole sum which they keep in hand—it is merely the amount remaining after the essential liabilities have been covered.

The calculation of the reserve which an office must hold involves the consideration of a number of technical points and may be performed in a variety of ways. First of all we may note that the problem can be regarded either retrospectively or prospectively. In the former case the reserve is seen to be (as, indeed, we have already pointed out) the accumulation with interest of such portions of past premiums as were not required to meet current claims. In the latter case the reserve must be determined purely from the point of view of the future and can be written down from first principles as the difference between the present value of the sum assured and the present value of the future premiums. By "present value of the sum assured" we mean the equivalent discounted value, at the date on which the calculation is made, of the chances (amounting in the aggregate, of course, to a certainty) of death in successive years. The other term may be explained similarly. It will be convenient, for purposes of reference, to have symbols for these various expressions. According to the notation usually employed A_{x+n} represents the present value of a unit payable at the end of the year in which occurs the death of a person now aged $x+n$, π_x stands for the pure premium, payable in advance each year, for the policy on the assumption that the person entered into assurance n years ago at age x, while a_{x+n} is the symbol for an ordinary annuity of 1 payable yearly during life. Seeing, however, that the assurance has been in force for an exact number of years, a further premium has just become payable and therefore we must use not a but $\mathbf{a}$, the symbol for an annuity-due. Translating into symbols the reserve for a whole-life policy of 1 taken out n years ago on the life of a person then aged x we have as our result $({}_nV_x)$:—

$$A_{x+n} - \pi_x \mathbf{a}_{x+n}.$$

It is perhaps scarcely necessary to say that when we are dealing with pure premiums based on the same mortality table and the same rate of interest as are being used in computing the reserve, the same result will be obtained whether we employ the retrospective or the prospective method.

The calculation of reserves is one of the chief responsibilities of the actuary of a life office and we shall now proceed to consider briefly some of the more important practical points which arise. They are :—

(1) Whether the valuation is to be made by a retrospective formula, by a prospective formula or merely by the use of prepared tables of reserves for individual policies.

(2) Whether the premium to be valued is to be the pure (or net) premium according to the valuation bases of mortality and interest or whether it is to be derived in some other way—and, if so, how.

(3) What assumptions are to be made to meet the fact that for most of the policies to be valued the duration elapsed since entry is not an exact number of years and the age at entry and the present age are both fractional.

(4) What mortality table is to be employed.

(5) What rate of interest is to be assumed.

(6) What extra reserves, if any, are to be made.

(7) What returns have to be furnished to the Government.

As regards the *first* point we may remark that whereas in Great Britain it is customary to use a prospective method, in the United States of America prepared tables are employed. Clearly, if we have a complete table of ${}_nV_x$ for all ages at entry and all durations the valuation can be carried through by taking the appropriate figure for each individual policy and simply summing the results. Such a procedure is easy, it shows the reserve held against any particular contract and consequently it provides an automatic means of excluding what are known as negative values. These last arise when the value placed upon future premiums is in excess of that placed upon the sum assured—in other words the policy in question is actually regarded as being an asset of the office instead of a liability. Theoretically this may well be the case but before allowing such a value to be used in practice, we must reflect that while the negative value will be realized if the assured maintains his policy, he is none the less under no compulsion to do so. The so-called asset is therefore a doubtful one and professional opinion holds strongly that all negative values should be excluded rigidly, each contract in which such a value arises being treated for the time being as if the liability were zero.

Valuation Returns in Great Britain must be made in conformity with the provisions of the Assurance Companies Act, 1909, reprinted in Appendix A to this volume. Reference to Schedule IV. (A) shows that the values of the sums assured and the values of the premiums have to be shown separately. It is natural therefore that a prospective method should be employed.

The *second* point is one of the greatest importance and has been the centre around which has gathered much discussion. The 'net premium' method has been in vogue for many years and so long as the valuation was made by the same table of mortality and at the same rate of interest as those used in the calculation of the premiums charged there was a well-nigh irresistible case for adopting it. Assuming the office premiums to have been loaded adequately for expenses and profits the method involved the automatic setting-aside of a margin sufficient to cover these factors since it took credit only for the future *net* premiums payable. Moreover, if associated with proper methods of grouping the policies, the method rigidly excluded all negative values. About fifty years ago, when the public confidence in life offices was subjected to severe shocks owing to some disastrous failures, it was very desirable to have a method of valuation which thus guarded against any tendency to the cutting-away of margins for future expenses and to the inclusion of uncertain assets and the method became firmly fixed in popular esteem. With the passage of time, however, other factors entered into the question with the result that of recent years there has been an increasing disposition to question (but not necessarily to disown) the method. These factors are firstly, the introduction of new tables of mortality for valuation purposes and secondly, the reduction of the assumed future rate of interest. It must be remembered that the office premium payable under a policy is fixed at the outset. New investigations into rates of mortality may be made subsequently but the premiums on existing assurances cannot be altered; moreover, it is not desirable to make frequent changes in the scales of premiums charged for new policies. The other factor, viz. the reduction in the rate of interest used in the valuation came into existence partly because it was found convenient to make in this way a proper reserve for the maintenance of the popular compound reversionary bonus and partly on account of an actual fall in the rate of interest realized.

The result was that the table of mortality and the rate of interest on which the premiums were based differed appreciably from those employed in the valuation and it became necessary to choose between two courses:—

Either (*a*) To employ a net premium based on the actual valuation table, or

(*b*) To depart from the strict net premium method.

The former alternative has been adopted hitherto in the majority of cases and this has given rise to the artificial position that, in the case of many of the policies valued, the margin between the office premium and the net premium is either very much too small or even, for without-profit policies, non-existent. This difficulty arises because the use of a lower rate of interest automatically increases the net premium. It must not be forgotten, however, that despite this increase in net premium the reserve is much larger, so that there is no question of insufficient resources, the fact being that, as actuaries say, the margin of interest is artificially swollen at the cost of the loading for expenses, etc. Hence it is not surprising that increased attention has been paid recently to the other possible course. One or two offices have given effect to it by valuing pure premiums calculated, say, at $3\frac{1}{2}$ per cent. by valuation factors based, say, upon 3 per cent. Such a method gives reserves which are very considerably in excess of those required by a net premium valuation at 3 per cent., since the higher the rate of interest, the lower the value of π and therefore the smaller the deductive element in the formula for ${}_nV$. A basis of this kind demands, however, exceptional resources which are beyond the capacity of many life offices. The more usual method of application is to value a proportion of the actual office premium, and, upon the understanding (*a*) that a sufficient percentage is cast off, in order to cover future expenses (and future profits if these last be not otherwise specifically provided for) and (*b*) that negative values are excluded, no serious theoretical objection can be raised. There will be, of course, a certain amount of work in connection with the elimination of negative values but no great difficulty should arise under this head.

Coming now to the *third* point we may mention that, with the very large numbers of policies in force, the desirability of making annual valuations (not necessarily for publication but certainly for the guidance of the actuary) and the growing disposition to publish bonus results as soon as possible after the close of the valuation period, it is impracticable to value each policy separately. Investigations have been made into the question of grouping large numbers of contracts together and of valuing the total as one policy and it has been proved that by adopting suitable methods the difference between a strictly individual valuation and a valuation in groups can be reduced to insignificance. There are numerous different ways of classifying policies and it will be sufficient to note here that whole-life assurances are usually grouped according to an assumed date of birth (say the 31st December nearest to the actual date) while endowment assurances are scheduled in years of maturity. The paper by Mr. McCormack mentioned at the end of this chapter should be read by those desiring detailed information with regard to the practical points arising in relation to cards, class-books, etc. Even after the grouping has been made certain points remain to be settled and of these the chief is that in connection with the date upon which the next renewal premiums may be properly assumed to fall due. In the formula ${}_nV_x = A_{x+n} - \pi_x a_{x+n}$ it is assumed that an annual premium is now due and unpaid since a_{x+n} is the symbol for an annuity-due. A moment's consideration will show that such a supposition is quite unjustified in respect of a number of policies grouped, say, by assumed date of birth. The natural course is to assume that on the average the premiums are spread evenly over the year and that, taking one case with another, the whole may be regarded as falling due 6 months after the valuation date. In such a case the approximate annuity value will be $(\frac{1}{2}+a_{x+n})$ instead of a_{x+n}, *i.e.* $(1+a_{x+n})$. It is found, however, in practice, that considerably more business is received in the closing months of the financial year so that the premiums tend to fall due even more than 6 months after the valuation date. The precise point varies in different offices and even in the same office at different times but, on the whole, about $7\frac{1}{2}$ months after the close of the year is a fair figure to assume, and, in that event, the annuity-value will be approximately $(\frac{3}{8}+a)$.

The *fourth* point on our list brings us to the choice of a mortality table. The method of valuation can be applied in a concrete case only when a definite table has been selected. In general the tendency will be to employ the most modern data available and in this country the British Offices experience is therefore used. But in what form? In Chapter IV. reference was made to select, ultimate and aggregate tables of mortality as possible bases for office premiums and they claim attention from our present point of view as well. An exact valuation by a select table will involve subdividing all policies issued within the last 5 or 10 years (according to the length of the select period in the particular table adopted) in respect both of age at entry and of duration. Considerably increased work will therefore result, and this disadvantage will not be removed entirely even if one of the several available approximate methods be employed. At the same time it is difficult to resist the force of the arguments in favour of the method especially as it is known that a select table involves the holding of somewhat greater reserves. As a matter of fact it is possible to obtain a fairly close approximation to the true result by using in the ordinary formula for ${}_nV_x$, the select net premium $\pi_{[x]}$ instead of the aggregate net premium π_x. (See Fraser, *J.I.A.*, vol. xl., p. 122.) Alternatively a combination of an aggregate and an ultimate table may be employed. Most British offices use an aggregate table and, save in special circumstances, the difference in reserve, although appreciable, is not very great. Some use a truncated aggregate table, (see Chapter III). This is practically equivalent to an ultimate table and involves somewhat lower reserves.

The following table (prepared by Mr. George King) gives the relative reserves by various tables with interest at 3 per cent. in respect of a representative office at various stages in its career. The office is assumed to be transacting only whole-life business, no allowance is made for bonuses attaching to participating policies and the reserve by the O^M Table is taken as being 10,000.

Table of mortality.	Distribution of business typical of an average office which has been in existence for		
	5 years.	25 years.	50 years.
(*a*) Select.			
$O^{[M]}$	11,410	10,344	10,166
$H^{[M]}$	11,629	10,2[illegible]6	10,014
(*b*) Mixed.			
O^M & $O^{M(5)}$ ... ... ((O^M alone for first 5 years)	10,000	10,131	10,071
H^M & $H^{M(5)}$ ... ... (H^M alone for first 5 years)	9,698	10,182	10,106
(*c*) Aggregate.			
O^M	10,000	10,000	10,000
H^M	9,698	9,843	9,906
(*d*) Truncated Aggregate.			
$O^{M(5)}$	9,613	9,783	9,844

Concerning these figures it is important to note :—

(*a*) That if allowance were made for bonuses attaching to with-profit policies the relative values would be altered considerably. For example, the difference between an H^M and an O^M valuation would be reduced owing to the fact that the reserve for bonuses required by the former table is greater than that necessitated by the latter table.

(*b*) That the figures take no account of endowment assurances which now form so large a proportion of the business of life offices. Dr. Buchanan has provided such figures (see list of reading at the end of this chapter) and in general it will be found that the differences between the results by various tables are not so marked as they are in the case of whole-life policies.

(c) That great caution is necessary in applying the figures to any particular case because the distribution of business may differ widely from that assumed in the table for an office of similar age. The table was based upon the combined data of various offices with regard to the relative number of entrants at different ages. A period of marked expansion or of relative stagnation in any office would suffice radically to alter the incidence of the business.

(d) That the differences between the results by various tables become much less marked as the assumed age of the business increases.

The *fifth* point on our list refers to the rate of interest. During the closing years of the 19th century a process of reduction in the rate of interest assumed in valuation went on steadily until with very few exceptions, the offices came to make their reserves on the basis of a rate not exceeding 3 per cent. per annum. There were several cases in which the process of reduction was carried so far that the valuation was made only at 2½ per cent.

We have referred already, incidentally, to the causes which led to this severe reduction and it will be worth while to consider them at this point in some detail. The fall in the " earned rate " was serious and progressive but even so that would not by itself have necessitated so great a general reduction in the " valuation rate." It happened, however, that concurrently there was a marked extension of the popularity of the uniform reversionary bonus system—especially in its compound form—and experience showed that it was convenient (just as research proved that it was permissible) to make provision for the maintenance of bonuses by means of the employment of a low valuation rate of interest. The bonus system in question involves the declaration of successively increasing reversionary sums and since the life assured is growing older the new bonuses have a much higher equivalent cash value per unit than had their predecessors at the moment of declaration. Consequently the system demands that the *cash* surplus available for bonus purposes in the case of each policy shall increase rapidly. The method of valuing by a low rate of interest meets this need by locking-up in the early years sums which otherwise would be revealed as surplus and by releasing them with interest at a later stage.

At the same time the conservative assumption made as to the future rate of interest involves a very large reserve which in practice, if not in theory, is a bulwark far more effective than would be an equal total sum divided (*a*) into an ordinary reserve calculated at a rate somewhat approaching the earned rate and (*b*) a balance specifically reserved for maintenance of bonuses.

In coming now to the *sixth* point we are passing, in reality, over the whole of the arithmetical work of the valuation itself. We have discussed in the first five points the chief matters which must be settled before the actual valuation can be made. Now we assume that the present values of the sums assured by all the policies in force have been computed on the chosen basis and that the present values of such premiums as it has been decided to value have been ascertained and deducted. What yet remains? In order to answer this question it is necessary to point out that the ordinary formula for $_nV$ is based on the assumption that when a claim arises the policy money will not be payable until the end of the year in which death or maturity occurs. This condition does not hold good in practice since claims are payable usually as soon as proper evidence is furnished. The formalities are not completed on the average for several weeks so that the true reserve clearly lies between the amount given by the ordinary formula and that produced by assuming claims to be payable immediately upon death. Hitherto most offices have made the necessary allowance by way of an addition at the end of the process of valuation. A common assumption has been that death occurs in the middle of the year and that claims are settled two months later: on this basis the crude reserves require to be increased by interest for one-third of a year. A much smaller addition is required for endowment assurances since many of these policies mature by reason of survivance. Some offices allow interest on the policy money either from the date of death or from the date of proof of death. In such cases it would be appropriate to make the valuation on the basis that all policies were payable immediately upon announcement of a claim. This can be done quite simply by using modified functions which are usually tabulated.

Other additional reserves arise in connection with certain types of extra risk (such as occupational extra risk), lapsed policies not included in the valuation but still involving a liability to the office, distribution of premium-income over the year if not already covered by the formula used (as explained already), extra loading reserves, etc.

When all these adjustments have been made the resulting figure is the net liability. By deducting it from the value placed upon the life assurance fund, we obtain the balance or surplus. The subject of the origin and distribution of such surplus is discussed in Chapter IX.

The *seventh* point which we have to consider is that of the returns to be made to the Government in connection with the valuation. It is practicable to deal in this chapter only with the general points arising in connection with these returns. In Appendix A will be found a reprint of the Assurance Companies Act, 1909. When a formal valuation of a life office has been completed the actuary has first of all to prepare answers to the questions in Schedule 4 (A). Briefly speaking, those questions demand a thorough account of the principles and methods adopted. Certain prescribed forms (set forth in the Act) have to be filled in and this schedule may be described briefly as asking for information (*a*) as to method and basis, and (*b*) as to results. Secondly, the actuary has to furnish answers to the questions in Schedule 5 (A). These questions demand, mainly, particulars as to the policies valued and the premium rates in force and accordingly the schedule may be described as asking for information (*a*) as to data, and (*b*) as to office practice.

The student should consider these schedules carefully, realizing always that they are very closely linked (some of the figures in Schedule 4 (A) being derived from Schedule 5 (A). He should also bear in mind that policies are of many different types and that in our discussion of the formulas to be used in valuation we have limited ourselves, necessarily, to the plain case of the ordinary whole of life contract.

Throughout the foregoing discussion no reference has been made to Industrial Assurance. The general principles of valuation apply in this case but modifications have to be introduced in practical work. Thus, the mortality table used is one based on the experience of the population at large and the valuation formula has to take account of the relatively high expenses of conducting the business. Some companies employ a net premium method while others make a gross premium valuation. The number of contracts is so enormous that special devices have to be used in preparing the data, and, since the unit in the business hitherto has been a premium of one penny per week rather than a definite sum assured, it has been found convenient to reduce the mass of contracts to an equivalent number of what are known as "penny-policies." The fact that the premiums are payable so frequently makes it possible to assume that the income is spread evenly over the year. It may be mentioned that the Industrial offices are developing their policies at monthly and quarterly premiums in order to minimize expenses. This development, however, will not seriously affect the distribution of their premium-income over the calendar year.

The subject of surrender values, etc., remains for consideration. When a policyholder desires to cease from paying premiums and to give up his assurance in exchange for a cash payment he is inclined to expect a return at least equal to the amount which he has paid. Usually, however, it is not practicable to fulfil his anticipation and a review of the reasons which compel the office to disappoint him will serve to introduce the general subject. In the first place it is necessary to remember that the office has been liable throughout the currency of the policy to pay the full sum assured immediately in the event of a claim. It is true (as the policyholder will probably hasten to point out) that in the case under discussion the life assured did not die, but nevertheless some of his fellows have done so and the claims in respect of them could only be paid with the help of the premiums received from those who survived. What really happens is that the office pays the sum assured when a claim arises partly by means of the reserve which it has made against the policy and partly by the help of the current premiums paid by all the policyholders.

Secondly, an allowance must be made for expenses of management which are often overlooked by enquirers. On the other hand interest has been earned on the reserves in hand from time to time.

If only the policyholder can be made to understand that some portion of his periodical premiums is required to meet current claims (and is therefore no more available for return than is the premium which he has paid for years under his fire insurance policy) he will appreciate the position. In practice it is sometimes helpful for the purpose of verbal explanation to deduct from the premiums actually paid the approximate cost of a temporary assurance. The balance roughly represents the amount which remains after meeting the risk and expenses and it will be found in many cases to agree fairly well with the cash surrender value as determined upon the ordinary office basis.

The foregoing considerations make it clear that what the office has available is not the total amount paid accumulated with interest but the balance of such amount after allowing both for past risk and for expenses. This balance is clearly in the nature of a reserve. We say "in the nature of" because the actual reserve will have been fixed by other methods. The distinction, however, is of no consequence for the present purpose which is to explain and establish that the reserve is the maximum amount which the office holds in any case. Before leaving this point it may be mentioned that in some instances, such as endowment assurances near to maturity, the reserve will exceed the total premiums paid because the heavy accumulations of interest outweigh the cost of the risk and expenses.

It would be wrong, however, to stop at this point and to assume that the reserve, less, perhaps, a percentage for profit etc., should be given as a cash surrender value. We must remember that for purposes of reserves lives are treated as if they formed one of a group—in other words they are considered as being average with regard to age at entry, date of entry, state of health, etc. Some are quite well, others are unfit, some even seriously ill—we do not know anything about individuals and we assume that all are alike. But when an application is made to surrender a particular policy the question must be considered. Clearly, if the life assured be dying, the policy will not be surrendered, but what if he feel himself to be an exceptionally good risk and be tempted to regard the protection of the policy as not being worth while? If such motives moved the majority of applicants the office would lose an undue proportion of first-class lives and the remainder would be definitely inferior. Against this consideration, however, must be set the undeniable fact that many policies are surrendered purely on account of financial stringency without particular regard to state of health. There has been some difference of opinion as to the relative strength of the various forces at work and it is very difficult to obtain any direct evidence. Probably there is, in general, a rough balance. Trade conditions, etc., doubtless affect the question to a great extent, and, as these vary, so will the balance change.

Notwithstanding these points it is clear that the reserve held must be taken into account, and if we regard it as being the maximum that could be given save in very unusual circumstances we shall not go far astray.

In addition to the question of health there is the matter of compensation to the office for the loss of a contributor to general expenses—a loss which, in practice, is made good by seeking a fresh policyholder at a relatively heavy cost. There is also the question of making a deduction for actual profit.

Effect can be given in numerous ways to the factors which we have discussed. It is not necessary to go into all of them here, our task being rather to give an account of practical needs and to see how far modern methods are successful in meeting them. In a typical British office large numbers of surrender values have to be quoted daily—not for the purpose of actual surrenders (these are relatively few in number) but in order to gratify the recurrent curiosity of policyholders and of banks and other lenders. Accordingly any method proposed must fulfil the following conditions. It must be so simple as to enable large numbers of values to be calculated rapidly and accurately and it must produce results which will be consistent—always and automatically—in relation to other alternatives such as paid-up policy values. We may mention, in passing, for the benefit of students that the term "paid-up policy" means the reduced assurance (receivable in the same circumstances as the original benefit) which is granted if the payment of premiums be discontinued. Some of the methods proposed lead to a different cash surrender value in respect of a policy which has just been made paid-up from that available immediately before the conversion. Difficulties of this kind are most troublesome in practice and Dr. A. E. Sprague has set forth, in *T.F.A.*, vol. iii.,

p. 201, a method by which they can be avoided. The chief point to notice is that the paid-up policy is found first of all and the cash surrender value is derived therefrom.

For the paid-up policy, allowable after n years (n annual premiums having been paid) in respect of a whole-life policy for 100 effected at age x, Dr. Sprague suggested the formula :—

$$100\left[1-\frac{P'_{[x+1]}}{P'_{[x+n]}}\right]$$

The symbol $P'_{[x+1]}$ stands for an office premium, based upon a select table with proper loadings for expenses, at age $(x+1)$. The premium at age $(x+1)$ is used because it is considered reasonable to ignore the first premium owing to the heavy initial expenses consequent upon the issue of the policy and so to treat the contract as having been effected one year later than the real date of entry.

The formula can be established by general reasoning as follows: $100P'_{[x+n]}$ is the office premium required at the present age $(x+n)$ to assure 100. But we can only take account of future premiums of $100P'_{[x+1]}$. Therefore these future premiums will provide in themselves a sum assured of $100\frac{P'_{[x+1]}}{P'_{[x+n]}}$. The balance must be covered by the premiums paid in the past, *i.e.*, the paid-up policy is $\left(100-100\frac{P'_{[x+1]}}{P'_{[x+n]}}\right)$ which is equal, of course, to the result given above.

Having thus deduced the paid-up policy and having made, in doing so, allowances for initial expenses and for the cessation of premiums in respect of good lives, all that remains is to find a suitable cash value. The paid-up policy is, virtually, a well-secured absolute reversion free from estate duty and expenses of realization. Dr. Sprague proposed accordingly, to multiply the paid-up policy by $A_{[x+n]}$ using the $O^{[M]}$ Table with interest at $4\frac{1}{2}$ per cent.—that basis approximating to the market basis at the time (1907). The foregoing method was suggested as being suitable for non-participating policies. As regards participating policies the cash value of the bonuses already attaching would be allowed and in addition some compensation for the surrender of the right to future profits would be given by using $A_{[x+n]}$ at say, 4 per cent. instead of $4\frac{1}{2}$ per cent.

For whole-life policies subject to a limited number of premiums and for endowment assurances a similar general procedure can be followed save that, in these cases, the popular proportionate paid-up policy is almost always given. Consesequently all that we have to do is to multiply that amount by the appropriate net single premium.

In connection with paid-up policies granted in lieu of with-profit assurances the question of future participation arises. As regards ordinary whole-life cases it is usual not to give bonuses after conversion. Bonuses existing at the date of the change are added to the reduced sum assured and the total forms the non-participating paid-up policy. For whole-life policies subject to a limited number of premiums and for endowment assurances the position is different. Some offices add the whole of the bonuses attaching while some give only the same proportion as they are allowing in respect of the sum assured Future bonuses are granted by a number of offices but many companies do not adopt this practice.

Offices usually require premiums to be paid for a minimum number of years (say two) before allowing a surrender value or an equivalent paid-up policy. Some endorse full tables of values on each policy issued, others promise that the surrender value shall never be less than a certain proportion (say 40 per cent.) of the premiums paid, excluding that of the first year.

Regulations vary widely both with regard to amounts given and conditions imposed. Some further reference to this latter point will be found in Chapter II. on policy conditions.

The following short table gives an idea of the results produced by Dr. Sprague's method :—

Specimens of surrender values of a whole-life policy for £1,000 without profits, premiums being payable throughout life.

Age at entry, 30.

Duration.	O^{M} 3 % Reserve.	Surrender Value.		Total premiums paid.
		4½ %	4 %	
5	64·9	32·9	37·0	103
10	135·0	82·0	91·3	207
15	210·8	139·6	153·6	310
20	292·0	206·0	224·2	413
30	464·6	360·0	383·1	620
40	632·7	524·6	547·6	827

It will be noticed that surrender values are given both at 4½ per cent. and 4 per cent. interest. The 4 per cent. values are considerably higher at the shorter durations, and, in view of the rise during the last few years in the market rate of interest for absolute reversions, it would appear that such a rate is much too low. A similar objection applies indeed to 4½ per cent. but the offices are confronted with the difficulty that to reduce scales of surrender values previously in force may be impolitic or even impracticable. Hence there has not been that heavy decrease in such values which the events of recent years would lead us, in theory, to expect. As a result surrender values represent usually the maximum sums which vendors of life policies can hope to secure unless special information be available as to the ill-health of the life assured.

Loans are granted on life policies to the extent justified by the surrender values after providing a due margin for interest.

LIST OF READING FOR THE USE OF ACTUARIAL AND OTHER STUDENTS WHO DESIRE TO PURSUE THE SUBJECT.

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CHAPTER VII.

UNDER-AVERAGE LIVES.

By F. L. Collins, F.I.A.

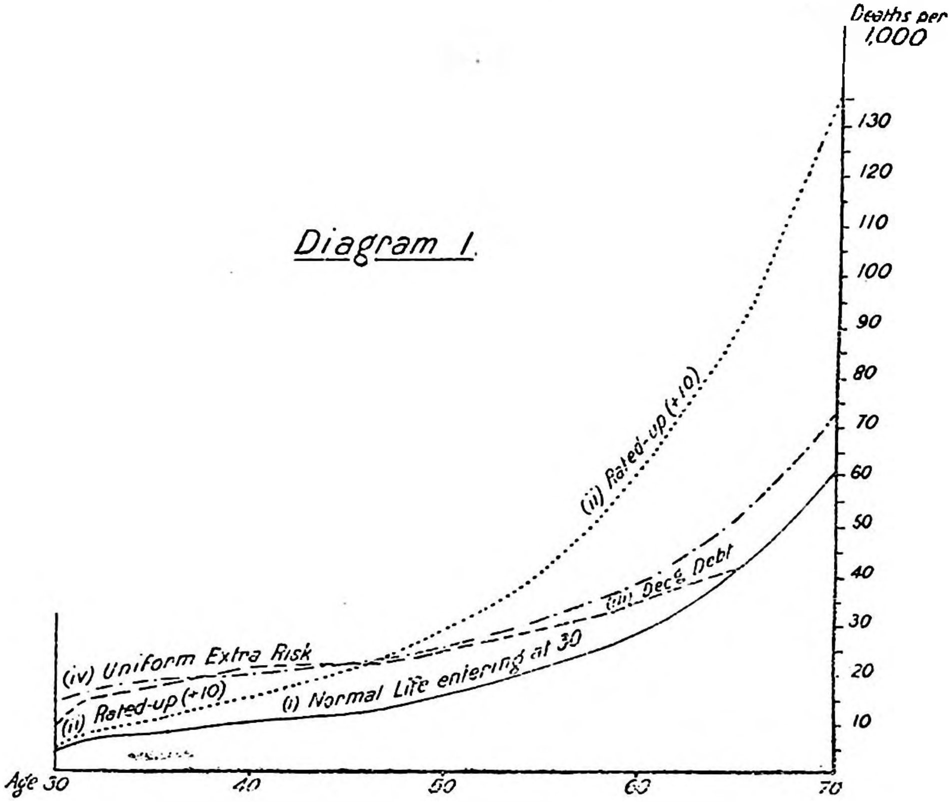
Before discussing the methods by which extra premiums are charged in the case of lives below the average standard, either from personal defect or hereditary taint, as distinct from those where a surcharge is required on account of the risks incidental to residence in unhealthy climates or to precarious occupations, it is well, in the first instance, to get back to first principles and consider the process of elimination whereby such cases come to light. Of the many proposals submitted, the published reports of various offices show that a great number are never accepted, and of the remainder a certain proportion are not completed. As regards the former, the medical officer plays a prominent part, but the effect of the selection which is thus exercised on behalf of the office, in preventing acceptance of undesirable risks, is to some extent modified by the circumstance that, on the average, those who propose for assurance are not the strongest lives of the community, for it seems probable that many persons, who feel themselves to be inherently good lives, prefer some other method of accumulating their savings. A further selection is also exercised by the public in deciding whether or not to complete a proposal when it has been accepted at an increased rate. If the extra premium imposed is insufficient it is almost certain that completion will ensue. If, on the other hand, the office has taken an unduly cautious view, the proposer will seek, and probably obtain, better terms elsewhere. Of late years, what is termed "non-medical" business has come into vogue, and, at first sight, it may seem that selection is not so keen as it was. Absence of medical examination, however, does not imply any lack of care. On the contrary, offices which grant policies without this safeguard, naturally scrutinize information from other sources extremely closely. The value of loyalty on the part of the outdoor staff in obtaining all adverse facts about the proposer cannot be overestimated. In many cases papers can be borrowed, or reports from the usual medical attendant can be got, which are invaluable. A person's own doctor often has far more knowledge than can be gained by a mere examination of his physique. Environment, habits and mode of life need to be considered, almost as much as bodily condition, in all cases.

Clearly, it is essential to insist on medical examination in the case of all "under-average" lives. All possible evidence as to the proposer's health and surroundings must be obtained, and the rate of premium charged will depend partly upon the reliance which can be placed upon the statements put forward. The term "under-average" requires definition. The late Sir G. F. Hardy pointed out at the International Congress at Vienna in 1909 that so-called "first class" lives do not form a homogeneous group. Not only are there great differences between individuals, but there are certain classes of lives, such as the clergy, in which the mortality is consistently below the normal; other classes, however, tend to counterbalance such cases and, on the average, results are obtained for use as the basis for the premiums found in ordinary prospectuses. It is difficult to decide exactly where the line should be drawn between average and under-average lives; but the standard is not the same for every office, as it is based upon a balance of the advantages of improved mortality and additional premiums against the general hindrance to business caused by restricting the "average" class. In this country, the combined experience of the various offices as regards the mortality of "under-average" lives has been investigated only once. This was when the D^{MF} Table was formed in conjunction with the H^{M} Experience in 1869, but no use was ever made of the data. Mr. L. P. Orr, as President of the Faculty of Actuaries, entered an earnest plea for a Bureau of Research and, but for the war, it is probable that some steps might have been taken to establish a permanent committee to investigate and report upon various types of extra risk. The difficulty of devising any system of classification is great. Mr. A. D. Besant, in the discussion at the Vienna Congress, already mentioned, expressed his conviction that "under-average" lives could not be regarded as capable of division into homogeneous masses. The difficulty is that in practice the groups of cases exactly alike are too small. Valuable results were obtained, however, by the Actuarial Society of America. The review by Mr. J. D. Watson (*J.I.A.*, vol. xxxviii., p. 363) of that specialized investigation should be read. In the further American Medico-Actuarial Mortality Investigation certain improvements were made in procedure as regards the standards for comparison and methods of classification. No less than 76 groups of medical impairments were taken and the "actual" deaths compared with those "expected" by a standard table formed from a combination of various American experiences. From the percentage which the "actual" deaths bear to the "expected," one can see at a glance the extent of the divergence in groups of ages and for all ages together. Such percentages are misleading where numbers are small, but this is probably the only method of focussing the results while affording an idea of the incidence of the extra mortality, which is of the utmost importance. Somewhat similar lines were followed by Messrs. Rusher and Kenchington for certain types of "under-average" lives assured by the Prudential Assurance Company. What strikes the observer most about these experiences is the comparatively small extent to which many of these special classes diverge from the standard adopted. This may be partly due to the standard not being satisfactory as representing modern experience of "first-class" lives of a homogeneous type. It is no doubt also due to the influence, which the knowledge of a particular adverse feature has upon the minds of those whose duty it is to decide upon eligibility. There is always a tendency to select a body of lives superior to the normal type in all other respects and thus to counteract the effect of the blemish. In the American Experience it must be borne in mind that nearly all these lives were accepted as "first-class." In the Medico-Actuarial Investigation certain cases, "sub-standard" by reason of "family history" only, are included. The Prudential experience is illuminating as to that type of extra risk, even in cases which were subject to a decreasing debt, this being the method adopted for dealing with the various types classified by the late Dr. Light for that company. It would be absurd, of course, to increase the premium in the proportion of these deaths. Thus, recourse is often had to the "expectation of life," with which everyone is familiar, and which affords a medium of communication between doctor and actuary. It is never used by actuaries themselves in calculating rates of premium, because the important element of compound interest has to be considered. For purposes of rating it is interesting to note that, in taking a given number of years from the expectation, a life is "rated-up" just about half as many years again. For instance, at age 40 the expectation of life by the $O^{[M]}$ Table is 28 years, and if the doctor fixed on five years as the period by which he would regard the life as falling short of the normal average, so as to give a modified expectation of 23 years, we should find that this expectation corresponded to age 47, or, roughly, to an addition of 7 years to the age. To rate up a life in such a way, without full consideration of the surrounding conditions, would, of course, be incorrect, because no question of rating-up can properly be settled without giving due weight to two important elements: (*a*) the incidence of the extra risk which is anticipated, *i.e.*, whether it is likely to occur early or late in life or to be constant; and (*b*) the reserve value which will attach to the policy as years go on. The true risk which the office runs consists not in the whole sum assured, but in the difference required in case of death to supplement the reserve value which it already has in hand. On the Continent the extra premium is charged on this difference, which is technically termed the "strain." In the case of a profit policy the question of the allocation of bonus also needs to be taken into account.

Many years ago the late Mr. G. H. Pinckard read before the Institute of Actuaries a paper dealing with the "Practice and Experience of the Clerical Medical and General Life Assurance Society, chiefly with reference to Invalid Lives," and he then mentioned that there was but one other office, the "Asylum" (which has since become merged in the London Assurance Corporation), which made a speciality of this class of risk. Since then nearly every office has opened its doors to a greater or less extent, to under-average lives, although, as Mr. Lutt has pointed out, a considerable divergence of practice exists in the treatment of such cases, perhaps due to differences of opinion on the part of medical men, and also to the fact that competition plays an important part in fixing all premiums, whether for average or under-average lives. Dr. Oscar H. Rogers and Mr. Arthur Hunter, F.I.A., have devised an ingenious system of numerical rating. This allots a certain number of marks—plus or minus—according to the percentages brought out in the Medico-Actuarial Investigation. They claim that this plan can be applied by trained clerks without medical assistance and results in a more uniform treatment of risks. There is a certain amount of diffidence on the part of those adopting it, but the general view in America seems to be that it is better than nothing.

When a case has been decided to fall below a certain standard, the obvious result is that less assurance should be given, for the same amount of premium, than would be allotted to a first-class life. This can be effected either (1) by adding a certain number of years to the age and charging the premium corresponding to the increased age, or (2) by a contingent debt which may either be fixed for a certain number of years (usually equal to the expectation) or, alternatively, may diminish by uniform instalments and finally disappear at the end of such period.

Diagram I. (next page) shows, firstly, in a continuous line the rate of mortality expressed in the number of deaths per 1,000 at every age from 30 to 70, according to the $O^{[M]}$ Experience for entrants at age 30; while the dotted curve shows the corresponding rate for a life entering at assumed age 40 during the 40 years following entry. It will be noticed that the effect of the first method is thus to give a rate of extra mortality which, as evidenced by the distance between the two curves from age to age, increases very rapidly throughout life. The method has been criticized on this account, it being argued that the mortality curve for under-average lives should tend to merge itself in the normal curve, for lives of the same attained age, as the effect of

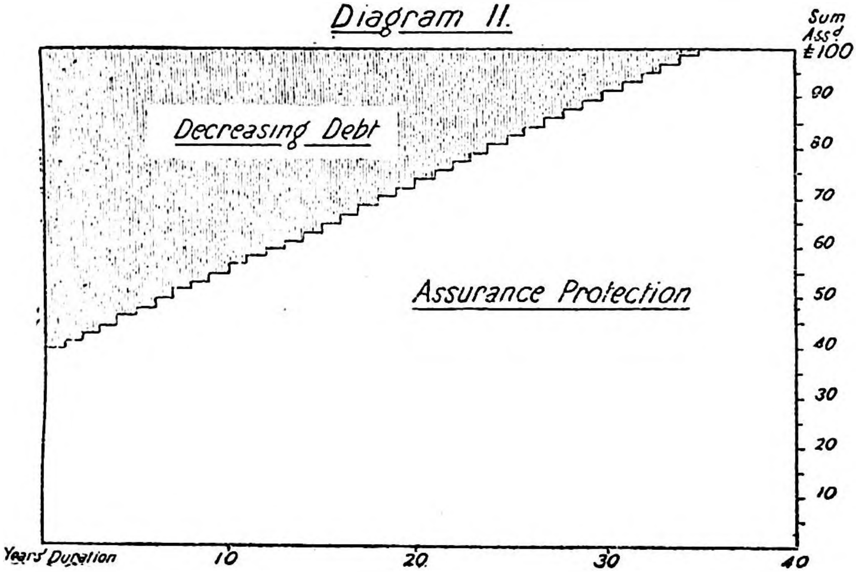


medical selection becomes less. There do not seem to be any statistics bearing upon the point, other than those which were given by Mr. Pinckard in the paper, already cited, which are summed up in his own words: "If it is thought that the large number of claims by death which have been made in the first few years will be compensated by the increased longevity of the survivors, who may be presumed to have perfectly recovered from the malady existing at the time of assurance, such expectation will assuredly be disappointed."

Diagram II. (next page) illustrates the alternative process of a diminishing contingent debt existing for the expectation of life at age 30—say, 35 years. On reference to the Tables given by Sir G. F. Hardy (*J.I.A.*, Vol. xxxii., p. 159) we find that the corresponding initial debt, for 10 years' addition at age 30, would be 61 per cent. of the sum assured, and putting aside the question of bonuses the diagram shows the deduction from the sum assured shaded-in. There can be no doubt that, so far as the public are concerned, some of the difficulties in extra premium cases are removed by this system of extra charge, and, from the point of view of the offices, a method which is popular naturally deserves the fullest respect. At the same time, it has been condemned by many actuaries on the ground that, as it throws the burden on the early years, the protection afforded is seriously impaired just at the period when it is of most value to those dependent on the life assured, and the diagram confirms this view.

In order to illustrate the mortality assumed when the surcharge is imposed by means of a diminishing contingent debt, a curve of dashes has been inserted in the first diagram. It will be noticed that the effect is to show a very heavy claim experience after the first few years, and, later on, a gradual merging in the ordinary rate experienced among healthy entrants at age 30.

Diagram II.



This merging finally occurs at age 65 when the debt is extinguished. It will be observed that the extra mortality, for which these two methods provide, is very distinct in character and represents two opposite extremes. There is little or no actual experience to compare with the curves shown in Diagram I., but it may be said that the dotted curve represents the type of case where the proposer either suffers from arterial degeneration, and, therefore, is really older than his age; or where, perhaps, the habits are doubtful and he possesses, like Sir W. S. Gilbert's gondolier, "a taste for drink, combined with gout." The other curve represented by the dashes is rather more difficult to define, but somewhat resembles those given in Mr. Manly's paper (*J.I.A.*, Vol. xxx, p. 97) for lives with consumptive family history, though it is only fair to Mr. Manly to say that he disclaimed any idea that the mortality of such lives ever became normal. It is, perhaps, apposite to mention that the question of family history, especially where one or more members have suffered from consumption, is one to which the public, as a rule, attach more importance than the medical advisers of the various offices. Perhaps it is interesting, therefore, to state that all the lives included in Mr. Manly's investigation were accepted as first class, and many cases in which there is only one blot in the family history are taken without imposing any extra at all. The paper prepared by Messrs. Rusher and Kenchington showed, from the "Prudential" experience, that consumptive family history—even where more than one member has been affected—is not a bar to acceptance at ordinary rates provided that the applicant is personally healthy. It is necessary, before condemning the life as possessing a tendency to acquire disease, to be quite certain that the physical characteristics of the parent, or parents, have, in fact, been transmitted.

Space forbids more detailed consideration of the medical aspects of life assurance, but many valuable works are given in a list at the end of this chapter. An excellent Medical Handbook has been published by Messrs. Pollock & Chisholm, in which the various ills which flesh is heir to are fully explained, and their bearing on longevity is discussed. This is now somewhat out of date but the Transactions of the Assurance Medical Society contain valuable treatises on different causes of impairment. The work recently published by Dr. Lister, the President of that Society will be welcomed by medical men.

There is only one further type of extra mortality to consider, and this is probably more common than those already mentioned —the type in which the extra risk is distributed more or less uniformly throughout life. A third curve of alternate dots and dashes has been inserted in Diagram I., which shows the effect of an extra mortality of 1 per cent. throughout life. This curve, running parallel with the normal curve, as might be expected, shows a diminishing proportion of super-normal risk. After what has been said as to the influence of the reserves on all questions affecting under-average lives, it is proper to state that all the above curves relate to whole-life policies effected at age 30. In the dotted curve, it is assumed that the office provides in its valuation the reserves required at the rated-up age, whereas, in the dashed curve (in which the extra is imposed by way of a decreasing debt) it is assumed that the ordinary reserves are held at the real age at entry, the debt being entirely disregarded. In the case of the third curve, a more ideal position is taken up, and one which may be regarded as a counsel of perfection, namely, that such lives are included in a special class applicable to cases of this type and valued for reserve purposes by a special mortality table based on the actual mortality which, by hypothesis, they will experience. These reserves would be rather less than those in the case of a healthy entrant at age 30. Mr. Lutt showed that out of 41 offices, 26 held the full reserve at the rated-up age, which is generally rather in excess of theoretical needs.

The question is often asked whether a life which is not up to the normal standard can be accepted for an endowment assurance at the ordinary rate of premium, and it has been urged that the higher rate charged for such policies enables the office to disregard the inferior vitality. The above diagram will help to solve this proposition. As will be seen from Diagram I., it would, obviously, be most unsatisfactory to treat a life of the consumptive type as first class, for the purpose of an endowment assurance, seeing that the office would run much the same extra risk for the next thirty years as would be paid for over the whole duration of a whole-life policy. A very lucid explanation of this point will be found in Mr. W. J. H. Whittall's Lecture on "The Theory of Life Assurance," p. 30. As a matter of theory, the whole difference of premium between the whole life assurance and the endowment assurance is needed to provide for the earlier payment of the benefit, and it is, therefore, impossible to employ it at the same time for two purposes. In practice, however, it is sometimes permissible to include lives proposing for endowment assurances in the average class, even although they would be rated-up for whole-life policies; but this is limited to cases where the extra mortality is expected to occur late in life, or where, as sometimes happens, there is a hereditary tendency in a family not to make "old bones."

As regards double endowments, it has been shown that, in those cases where the extra risk is increasing, the theoretical rate is fairly constant, but not where the extra risk is of the diminishing type. Five offices out of 37 mentioned in Mr. Lutt's paper, waived the extra (or extras of not more than 20s. per cent.) altogether.

At first sight, it seems rank injustice to impose an extra premium for female lives proposing for assurance, and, at the same time, to offer a smaller rate of annuity than would be allowed to the corresponding male proposer. But this apparent anomaly is really justified by the British offices experience, which shows that the female assured mortality is rather greater up to age 45, when the risks of child-bearing cease, after which it becomes more favourable than that among males of the same age. The extra premiums required on this account are, however, quite nominal, and many of the offices consider that the risk of child-bearing is met by a single extra premium of 10s., or £1 per cent. in cases where such risk is imminent. For those who do not possess a

" Bourne's Insurance Directory " a convenient précis of office charges in this respect for whole-life policies will be found in Wilkie's " Vade-Mecum." This shows that there are still offices continuing the practice, which was found to exist by the Actuaries' Club in 1889, of charging a uniform annual extra of 5s. per cent., usually removable at age 50. It is interesting to note that, a few years ago, the Prudential Office announced their intention to discontinue this extra charge, which, like some others, probably causes more irritation than the premiums are worth. There is, therefore, an all-round tendency to abandon small charges for such defects as rupture, and so on, provided adequate precautions are taken, and to sweep such cases into the wide limits of the average class.

When policies are effected with participation in profits, the method of treating under-average cases for bonus purposes should be taken into account in reckoning the intrinsic cost of a given surcharge. For example, three companies incorporate all extras in the permanent premium, and seven other offices adopt the increased age as the basis of participation. To illustrate the advantage thus given, the case of a person effecting a policy at age 30, but charged the premium for age 40, may be taken in an office which allows both these advantages, and allots the bonus in the form of an increasing percentage of the premiums paid during a valuation period. The rate of premium for age 40 is about 40 per cent. greater than that for age 30, so that each successive cash allotment would be 40 per cent. greater for the under-average than for the corresponding first-class life.

The option exercised by a policyholder as to the manner in which his bonus shall be received has been proved to exercise an influence over the future mortality experienced among those accepting each class of bonus, even where the option is only given once, and that shortly after the policy is effected. Where, however, the bonus option is given on each occasion it is obvious that the selection will be far more potent. Most offices allow the policyholder to take a cash allotment or to have its equivalent in the form of an addition to the sum assured, which latter he will be wise to adopt should further deterioration have occurred in his health. The equivalent reduction of premium will prove more profitable if an improvement has taken place. The policyholder thus obtains compensation for any want of exactitude in fixing the extra premium at the outset. One, for example, who entered at 30 and was charged the premium for age 40, being definitely certain that his prospects of longevity are really greater than those of a person 10 years older, decides to utilize his cash allotments in the purchase of an immediate annuity (*i.e.*, reduction of premium) on the basis of the rated-up age, or, better still, in the purchase of a deferred annuity by limiting the number of premiums payable. By devoting the first four quinquennial bonuses to this latter purpose, the premium is completely extinguished at the end of 20 years, so that the policyholder, apart from having sacrificed four bonuses, is then just as well off as a healthy person who effected a 20 payment policy at the outset, and paid a slightly larger premium. From that point, however, his cash bonus will still be 40 per cent. higher than the corresponding healthy man's, and thus the process of adjustment will go on in future as he continues to belie the original forecast.

This system is preferable in many ways to that, which is not uncommon in connection with occupation-risks, of postponing the participation in profits until the expectation is reached, or the occupation is abandoned. Periodical chances of self-selection are afforded, and the assured is automatically put to the test as to the sincerity of his conviction, if he thinks that the surcharge is no longer necessary. From the point of view of the office, too, this is an admirable plan when the life has been prolonged beyond the expectation in connection with applications for remission of the surcharge, on the ground that this fact is, in itself, proof that unjust treatment has been received. Some policyholders must survive the expectation so as to compensate for those who fail to reach it, and the fundamental principle of life assurance consists in allowing those who live long to pay for those who die early. It would not, therefore, be sound, theoretically, for an office to allow those who lived beyond the expectation to discontinue paying either all, or any part, of the premium, and the office could afford to disregard such complaints with comparative equanimity were it not for the fact that a satisfied policyholder is always the best agent for introducing new business, and *vice versâ*.

Equally difficult is the somewhat similar problem of surrender values to the man in the street. Surrender values are usually regarded from the point of view of the total premiums paid, and it is claimed that these, or at any rate the greater portion of them, remain, with compound interest, in the hands of the office, and it is only fair that they should be returned. All that the office actually has in hand, however, is the reserve value of the policy, of which it is clearly right that it should retain sufficient to replace the policy on its books and prevent those remaining from suffering loss. In the case of under-average lives, therefore, it is quite clear that only the offices, which value such policies at the rated-up age, could, if they wished, make the surrender value the same as that allowed to a healthy entrant at the rated-up age. The selection exercised against the office is exceedingly strong, and the chances are that those who decide to surrender their policies are just the ones whose premiums would continue for many years and assist to pay the early claims. It is, therefore, usual to allow as a surrender value exactly the same as would be allotted to a healthy entrant, disregarding excess premiums.

The reason for this will be more readily appreciated by considering that the market value of such a policy is often really less even than this, seeing that it is burdened with a heavier premium than in the case of a healthy life of the same age. To make this point clear, suppose that a non-profit policy is taken out at a premium of 5 per cent. (the life being a bad one) and some years afterwards it transpires that, owing to improved health, a policy can be effected, in spite of the increased age, at 4 per cent. It is quite certain that, in the open market, it would not be worth anybody's while to give the policyholder money down for the privilege of paying 1 per cent. extra to get the sum assured. Profit policies, of course, stand on rather a different footing on account of their bonus advantages. Such offices as allow the bonuses to be dealt with at the rated-up age, would add to the surrender value of the corpus of the policy the cash value of the reversionary bonuses in accordance with the assumed age, and thus provide a larger total return than in the case of the corresponding policy effected at the normal rate of premium.

It is well to add a caution that cases in which the bonus is declared on the compound reversionary system, do not lend themselves to the exercise of bonus options, as the surrender of the reversionary bonus usually carries with it a proportionate reduction in the future bonuses to be enjoyed, a fact which does not, as a rule, receive any special recognition in the equivalent allowed. It is also necessary to bear in mind that, in cases where the bonus is relied upon to smooth away inaccuracies, the valuation basis and other profit-producing factors should be carefully safeguarded so as to secure stability in the results. In other respects, the bonus system seems a most appropriate mode of counteracting the influence of the adverse mortality experienced amongst under-average lives.

LIST OF READING FOR THE USE OF ACTUARIAL AND OTHER STUDENTS WHO WISH TO PURSUE THE SUBJECT.

Journal of the Institute of Actuaries.

Mortality of Various Classes of Bonus Policies, G. F. Hardy.—Vol. xxiii. p. 1. (Mar., 1881.)
Consumptive Family History, H. W. Manly.—Vol. xxx., p. 97. (Feb., 1892.)
Double Endowments, A. Levine.—Vol. xxxiv., p. 514. (Apr., 1899.)
Experience of 34 Companies (Family and Personal History).—Vol. xxxviii., p. 363. (1903.)
Extra Premiums, H. E. W. Lutt.—Vol. xli., p. 461. (Apr., 1907.)
Female Assured Lives, C. W. Kenchington.—Vol. xliv., p. 105. (Dec., 1909.)
Some Recent Statistical Results, W. P. Elderton.—Vol. xlvi., p. 105. (Dec., 1911.)
Effects of Family and Personal History, E. A. Rusher and C. W. Kenchington.—Vol. xlvii., p. 433. (Apr., 1913.)
Medico-Actuarial Investigation.—Vol. xlvi., p. 384. (Oct., 1912.)

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Medico-Actuarial Investigation.—Vol. xlix., p. 158. (Apr., 1915.)
Decreasing Debts, R. Todhunter.—Vol. xlix., p. 266. (Mar., 1915.)
Decreasing Debts, C. H. Ashley.—Vol. li., p. 126. (Oct., 1918.)
Medical Examination for Life Insurance, T. D. Lister, Review.—Vol. liii., p. 83. (Mar., 1922.)

Transactions of the Faculty of Actuaries.

Expectation of Life in Circulatory Disease, G. A. Gibson.—Vol. v., p. 227. (Dec., 1910.)
Research, L. P. Orr.—Vol. vi., p. 55. (Dec., 1911.)

Journal of the Institute of Actuaries Students' Society.

Special Number (1915) containing, *inter alia*, reprints from the following papers :—
Hypothetical Mortality Table, G. H. Ryan.
Extra Premiums for Two-life Assurances, G. H. Ryan.
Extra Mortality, F. W. White and W. J. H. Whittall.
Decreasing Debts, A. W. Sunderland.
Decreasing Debts, G. F. Hardy.

Transactions of the Actuarial Society of America.

Numerical Method of Rating.—Vol. xx., p. 273. (1919.)

Transactions of the Assurance Medical Society.

Numerous Papers on all aspects of the subject.

Journal of the Chartered Insurance Institute.

On the Significance of Urinary Abnormalities in Persons applying for Life Assurance, A. Rabagliati.—Vol. x., p. 25. (1907.)
Tuberculosis and Insurance, J. G. Emanuel.—Vol. xi., p. 1. (1908.)
Abstainers and Non-Abstainers, E. Duncan.—Vol. xii., p. 25. (1909.)
Personal and Family History in relation to Life Assurance, J. Dulberg.—Vol. xii., p. 37. (1909.)
Undesirables, T. R. Taylor.—Vol. xii., p. 57. (1909.)
Classification of Life Assurance Risks, D. E. Kilgour.—Vol. xii., p. 87. (1909.)
The Blood Pressure in Life Assurance, R. A. Stirling.—Vol. xiii., p. 1. (1910.)
The Influence of Heredity of Consumption in Life Assurance, L. K. Harrison.—Vol. xiii., p. 15. (1910.)
Blood-Poisoning, A. H. Mountcastle.—Vol. xiv., p. 1. (1911.)
Some Observations on Medical Examinations for Life Assurance, W. Calwell.—Vol. xiv., p. 47. (1911.)
The Medical Report, G. Williamson.—Vol. xv., p. 19. (1912.)
Rejected Lives, T. Beattie.—Vol. xvi., p. 247. (1913.)
Medico-Social Problems, T. Oliver.—Vol. xvii., p. 1. (1914.)
Traumatic Hysteria and Neurasthenia, J. W. G. Grant.—Vol. xvii., p. 19. (1914.)
Some Everyday Problems in Life Assurance from the Medical Standpoint, R. S. Skirving.—Vol. xxiv., p. 77. (1921.)
N.B.—There are numerous papers in the earlier volumes of J.C.I.I. but, in view of the development of medical opinion, it is not thought necessary to supply detailed references for a period of more than 15 years. The dates given are those borne by the volumes.

Other Books and Papers.

Medical Examination for Life Insurance, T. D. Lister.—Edward Arnold & Co. (1921.)
An Elementary Lecture on the Theory of Life Assurance, W. J. H. Whittall. —C. & E. Layton.
Dictionary of Medical Terms.—Stone & Cox.

CHAPTER VIII.

EXTRA RISKS [OCCUPATIONAL OR CLIMATIC].

By R. E. UNDERWOOD, M.B.E., F.I.A.

INTRODUCTORY.

Life assurance premiums are usually based on a mortality table constructed from the experience of lives all of whom were accepted for assurance at first class rates and not incurring special hazards of occupation or residence at the time of acceptance. Such a mortality table clearly does not represent the experience of lives which cannot be so classified and it is necessary to determine what charge must be made, over and above the normal, to cover the cost of the extra risk.

In the case of Industrial Life Assurance premiums the position is somewhat different, as they are based on the mortality experience of the general population and not on that of specially selected lives. Hazardous occupations have, therefore, had their weight in the mortality and are to a certain extent already charged for in the premiums. For this reason, and as a measure of business convenience, Industrial Offices only require extra premiums for occupations which are exceptionally hazardous. In these cases the extra premium is charged firstly, to prevent the office being loaded with an undue proportion of the bad risks and secondly, to make such hazardous assurances as are completed pay for themselves.

EXTRA PREMIUMS FOR OCCUPATION.

(*a*) *Naval and Military Officers and Men.*—Life in the army or navy is healthy and not abnormally hazardous. Assurances may therefore be accepted at ordinary rates subject to the payment of an extra premium in the event of residence outside the free limits, or of proceeding on active service. This arrangement is, however, far from satisfactory, since it entails the payment of "such extra premium as the directors may think fit" at a time most inconvenient to the assured. For instance, at the outbreak of the Great War such policies were charged an extra premium of about £5 5*s*. per cent. for one year or less. In the case of policies effected after the outbreak of war the corresponding extra premium was about £7 7*s*., and of policies effected later about £12 12*s*., rising by the end of 1915 to about £20.

A better plan in such cases is to charge a small annual extra premium from the outset to cover the risk of residence abroad and active service, the extra being removed on permanent retirement from the service. In the case of proposers not under orders for foreign or active service life offices have now returned to their fairly general pre-war practice of charging 10*s*. per cent. per annum for this risk, although it should be mentioned that more than one office now accepts such proposals without extra premium for the war risk. Of the latter one office also places no restrictions on the policy as to residence, whilst another is willing to remove residential restrictions for a constant additional premium of not less than 2*s*. 6*d*. per cent. per annum according to the circumstances of the case.

The following are a few of many alternative methods of dealing with this extra risk :—

(1) Include extra with ordinary premium and make it payable throughout duration of policy. The charges commonly made on this plan vary from 6*s*. 6*d*. to 10*s*. 6*d*. per cent. according to the age and the term. The only objection to this arrangement is that the extra charge is payable after the risk has ceased.

(2) Charge With Profit rates but give no bonuses until permanent retirement from service. This method is erratic in its incidence as between one class of policy and another. Further, the bonus loading in most cases equals or exceeds the usual service extra and the bonuses forfeited normally exceed the bonus loading in value. Hence this method is not usually favourable to the proposer.

(3) Extra premiums paid into a separate fund ; only a portion of the sum assured guaranteed, and the balance of the claims paid out of the separate fund, any surplus being eventually refunded to the survivors in proportion to their payments. This is a Continental method, worked in conjunction with extra premiums based on the rank of the assured.

For military officers stationed in, or proceeding to, India at the time when their proposal is submitted, an additional climatic extra is usually required. In some cases this would consist of the ordinary Indian civilian extra, according to the practice of the particular office, but in others some small deduction would be made when combining the two sums. One office is prepared to accept proposals on the lives of military men resident in India without any extra premium whatever.

As regards the navy, it is not usual to add to the occupational extra on account of foreign service although this is occasionally done. If, however, the proposer is engaged in the submarine service a further extra would be payable which would not be less than £1 per cent. as a rule. Some offices, however, either discourage such proposals, or charge a practically prohibitive extra, such as £5 5*s*. per cent. per annum, whilst the offices which make no charge for naval service also cover submarine service without extra premium.

Statistics.—Reference should be made to a paper by Messrs. Ackland and Smee (*J.I.A.*, xxxiv., p. 358), being part of a report to the Gresham Life Office, which includes a detailed analysis of the special elements of risk involved in army service, viz., climate risks, risks incurred in "small wars," and the probabilities of "national wars." On the basis of extra premiums spread over the whole period of the policies the extras for a whole-life assurance varied from about 11*s*. per cent. at age 20, to 8*s*. at age 40. The statistics upon which these results were based were derived from the experience of officers and men combined and related, broadly, to the latter half of the 19th century.

Mr. J. J. McLauchlan, in the same volume (p. 251), dealt with the figures in a different fashion and arrived at the conclusion that the extra mortality, though not so large for naval risks, was considerably greater in the case of the army.

(*b*) *Royal Air Force*.—Members of this force are sometimes accepted on the same terms as in the case of the army, with the exception that in the event of death due directly or indirectly to flying, the surrender value is payable in lieu of the sum assured. In the case of a pilot, such a provision robs the policy of nearly all its value in time of war and is not satisfactory even in the case of an administrative member of the force who might be called upon to fly in an emergency. Further, disputes are almost certain to arise in individual cases as to whether death was or was not due to flying. This subject is further discussed in the next paragraph.

(*c*) *Aviation*.—The majority of offices will now allow a civilian an occasional flight as a passenger without extra premium, but in most cases proposals on pilots are firmly discouraged. A few offices, however, have provided assurance schemes for pilots, but even these offices are not at all anxious to undertake this class of business.

The following are typical quotations of extra premiums :—

(1) Pilots and others in Royal Air Force £5 5*s*. per cent. per annum inclusive. Civilian pilots on cross Channel services £3 3*s*. per cent. to £5 5*s*. per cent. per annum. Pilots in England £3 3*s*.

(2) All risks, including war and climate, £10 10*s*. per cent. per annum. Excluding war risk and only for United Kingdom, plus Channel crossings, £7 7*s*. per cent. per annum. Excluding war risk and for United Kingdom only and within Territorial Waters, £5 5*s*. per cent. per annum.

(3) Pilots and others in Royal Air Force, 10s. per cent. per annum for "deterioration" risk (in addition to the usual 10s. per cent. military extra). If death occurs within three months of a flight, surrender value only is payable if in the opinion of the Chief Medical Adviser the death is due to the flight.

(*d*) *Mercantile Marine.*—Officers, men and wireless operators in the Mercantile Marine are now very commonly charged 5*s*. per cent. per annum extra premium, removable on permanent retirement from the sea to a healthy climate. This extra would not usually apply to coasting boats in unhealthy climates or to boats calling at the West Coast of Africa, but would apply to the ordinary tramp steamer which goes from port to port wherever it may be sent.

An alternative method is to make no charge for voyages in first class vessels trading between ports within the free limits, but to charge from 5*s*. to 10*s*. per cent. extra to others according to the circumstances. Finally, some companies charge as much as 20*s*. per cent. per annum, making proportionate refunds for time spent at home on shore.

(*e*) *Liquor Trade.*—Ample evidence is now available to show that lives connected with the liquor trade experience heavy mortality. For instance, as the result of an investigation by the Associated Scottish Life Offices, the annual extra premiums per cent. recommended were:—Publicans 25*s*., innkeepers and hotel keepers 20*s*. and licensed grocers in Scotland 10*s*., and in Ireland 15*s*. Also the *Prudential* experience for the period 1874 to 1905 was investigated and as a result that office charges £2 per cent. extra for whole-life policies and 30*s*. per cent. for endowment assurances. Another company which has investigated its own experience charges 30*s*. per cent. per annum.

The latest figures are to be found in the report of the Medico-Actuarial investigation of the mortality of American and Canadian life assurance companies for the period 1885 to 1908. The various branches of the trade were very fully analysed and high mortality rates were found, especially amongst those serving at the bar. In one group the mortality was as high as 182 per cent. of the normal. A heavy death rate was found from cirrhosis of the liver, cerebral haemorrhage, apoplexy, diabetes and Bright's disease.

In practice 20*s*. per cent. is the normal annual extra for publicans, commercial travellers calling on licensed houses and others having duties in the bar. In the case of proprietors of residential hotels not attending the bar, an extra would not usually be charged. Brewers are not usually charged an extra, nor licensed grocers in England and Scotland where only unbroken bottles are sold. If, however, the licence allows the sale of intoxicants in bulk the charge would usually be from 10*s*. to 15*s*. in England or Scotland and £1 per cent. in Ireland.

(*f*) *Miscellaneous Trades.*—Until recently the ordinary life offices did not often receive proposals from the working classes, but owing to changes in status due to the war, these proposals are now much more common.

The periodical supplements to the Annual Returns of the Registrar-General give interesting information as to the mortality of certain trades, but mortality rates in the form of deaths per thousand are apt to be misleading since they do not take into account the age distribution of those engaged in the trade. Further, such statistics necessarily make no allowance for men whose health has suffered in one trade and who die whilst occupied in another to which they have transferred in search of lighter work. Some valuable statistics were compiled in the "Medico-Actuarial" investigation already referred to, but these should be used with caution as they refer to American and Canadian lives with whom conditions are sometimes very different from those in this country.

Space will not permit an inclusive list of occupations, even if that were possible, but the following are lists of typical trades for which an additional premium of from 5*s*. to 10*s*. per cent. per annum is commonly charged. The trades shown in the list marked B are those to which the higher charge usually applies.

TRADE.	SPECIAL FEATURES.
	LIST A.
Baker (if works in bakehouse) ...	Chest diseases from dust and heat.
Brass founder	Brassfounders' ague.
Bricklayer, Builder and Slater ...	Accidents from working on scaffolds.
Butcher (who slaughters)	Accident.
China and earthenware worker ...	Plumbism and chest diseases (including phthisis).
Mason, Plasterer and Stone Polisher	Respiratory disorders from dust.
Painter (if mixes paints)	Plumbism.
Moulder (or person working with molten metal)	Chest diseases (from fumes) and accident.
Plumber	Plumbism.
Printer	Phthisis from dust.
	LIST B.
Boiler Maker and Riveter	Accident and nervous diseases from noise.
Boiler Stoker	Chest diseases from heat.
Engineer (or person working with machinery in motion)	Accident and nervous diseases from noise.
File Maker and Grinder	Chest diseases (including phthisis) from dust.
Glass Worker	Phthisis from dust.
Quarryman (who assists in blasting operations)	Accident.

Railway employees (*e.g.*, Engine Drivers, Stokers and Cleaners, Platelayers and Shunters, and those working on the permanent way) ...	Accident.
Smelter	Plumbism from fumes.

(NOTE.—Pneumo-coniosis denotes that form of "professional phthisis," which is occasioned by the inhalation of various dusts or powders. It covers the cases of phthisis mentioned above.)

In addition, colliers and others working underground are usually charged £1 per cent. extra in view of the risks of accident from water and explosion (including the use of explosives) and falls of roof. Mining engineers who are constantly supervising underground would be charged from 10s. to £1 per cent. according to circumstances, but if they only descend at infrequent intervals they might be accepted without extra. It should be noted that lead, tin and copper miners experience heavy mortality from phthisis.

EXTRA PREMIUMS FOR RESIDENCE.

Unrestricted Policies.—Many offices are now prepared to issue policies which are unrestricted as to residence in all cases where the proposer has no prospect of proceeding beyond the free limits. With other offices, however, the policies are restricted at the outset but become free after the expiration of a few years (3 or 5), provided the life assured has reached a certain age (25 or 30), and has not in the meantime proceeded beyond the free limits.

Free Limits.—The free limits of different offices do not vary very much and the following statement, given by Mr. H. E. W. Lutt in the last edition of this work, indicates the lines on which they are normally planned :—

> Most portions of the world (Asia excepted) not between 33° north and 30° south, with—occasionally—a restriction to south of 60° north in addition ; the more civilized parts of Africa, Asia Minor, Japan, and Siberia (the East Coast and the more accessible parts). All Australia (the portion north of 20° or north of the Tropic of Capricorn, sometimes excepted). Fiji and some other islands of the South Pacific Ocean ; the Canary Islands.
>
> The Union of South Africa, which includes the Provinces of the Cape of Good Hope, Natal, Orange Free State, and the Transvaal. In the case of our other South African Territories, office practice varies ; some include within the free limits the Bechuanaland Protectorate, and the portion of Rhodesia south of 20°, or, in one or two cases, as far north as the River Zambesi.

Extra Premiums.—Extra premiums vary in amount as between office and office to a truly remarkable extent and although several attempts have been made to secure some kind of uniformity, these have not been attended with any success. In most cases the absence of satisfactory statistics is the great bar, some offices preferring to discourage business in districts about which they know little by charging prohibitive extras. The following table, compiled by Mr. Lutt, is still an excellent guide to the extra premiums commonly quoted, although the tendency is towards reduction in view of the gradually improving

TABLE OF CLIMATE EXTRAS.

Locality.	Unlimited in Duration.			Limited in Duration.			Remarks.
	Lowest Extra.	Highest Extra.	General Extra.	Lowest Extra.	Highest Extra.	General Extra.	
Asia—							
India	10s.	30s.	20s. −	10s.	40s.	20s. −	
Burmah	10s.	30s.	20s. −	10s.	40s.	20s. −	
Persia	nil*	40s.†	20s. −	10s.	25s.	20s. −	* N. of 33° † Gulf of Persia
Malay Peninsula and Siam ..	10s.	30s.	20s. +	10s.	40s.	20s. +	1 office discourages
East India Islands—							
Dutch	20s.	40s.	20s. +	10s.	40s.	20s. +	
British or American	20s.	40s.	20s. +	10s.	40s.	20s. +	
China—							
Treaty Ports ..	nil*	50s.	20s. −	nil	40s.	20s. −	* N. of Shanghai, or 33° N.
Remainder	nil†	40s.	20s. −	20s.	40s.	20s +	† N. of 33° N.
Africa—							
Northern Coast .	nil	10s.*	nil	nil	nil	nil	* 1 office only
Egypt, Nile Valley ..	nil*	20s.†	..	nil*	20s.†	..	* N. of 1st Cataract; or 2nd Cataract; or N. of 13° † S. to Khartoum
West Coast	£5. 5s.	£10. 10s.	£5. 5s. +	£5. 5s.	£10. 10s.	£5. 5s. +	18 offices discourage
Congo	£5. 5s.	£10. 10s.	£5. 5s. +	£5. 5s.	..	..	18 ,, ,,
South West Coast, 8°-20° S. ..	£3. 3s.	£7. 7s.	£5. 5s. −	40s.	£5. 5s.	£3. 3s. −	12 ,, ,,
Rhodesia—							
N. of R. Zambesi ..	10s.	£5. 5s.	20s. +	10s.	£5. 5s.	20s. +	4 ,, ,,
S. ,, ,, ..	nil	20s.	nil to 20s.*	nil	20s.	nil to 20s.*	1 office discourages * According to locality
Delagoa Bay .. .	nil	£5 5s.	40s. −	nil	£3. 3s.	40s. +	4 offices discourage
Zanzibar .. .	30s.	£3 3s.	£3. 3s. −	20s.	£3. 3s.	20s. or £3. 3s.	7 ,, ,,
British Central Africa	25s.	£5. 5s.	40s. +	40s.	£5. 5s.	£3. 3s. +	7 ,, ,,
Mauritius .. .	nil	40s.	20s. −	10s.	20s.	25s. −	
America—							
United States (portions S. of 33° N. L. bordering on Gulf of Mexico)	nil	40s.	20s. −	nil	40s.	10s. +	
Mexico—							
Tableland	nil	40s.	20s. −	nil	40s.	20s. −	
Coast and low-lying country	10s.	40s.	20s. +	30s.	40s.	30s. or 40s.	1 office discourages
Central America .	20s.	40s.	40s. −	20s.	£3. 3s.	40s. −	
Panama	20s.	£3 3s.	40s. +	30s.	£3. 3s.	£3. 3s. −	8 offices discourage
West Indies .. .	10s.	50s.	20s. +	20s.	30s.	20s. +	1 office discourages
Guiana	20s.	40s.	20s. +	20s.	30s.	20s. +	1 ,, ,,
Brazil	nil*	45s.	20s. +	10s.	30s.	25s. +	* S. of free limit; 1 office discourages
Argentina	nil*	10s.	nil +	nil*	10s.	nil +	* All; or S. of 30°
Chili	nil	10s.	nil +	nil	10s.	nil +	
Peru	nil	20s.	20s. −	nil	20s.	10s. +	

conditions in the areas to which lives assured usually proceed. The "general" extras are those which appear to be charged more often than any other, the positive and negative signs indicating to which side, whether to greater or smaller extras, the balance of practice tends.

Basis.—Where reliable statistics are not available, extra premiums are usually based on general knowledge as to climate, which may be defined as the condition of a region with respect to its heat and moisture. This is determined chiefly by latitude, inclination of the earth's axis, elevation above sea level, proximity to sea, ocean currents, winds and sheltering hills. In addition the mortality of a district may be greatly affected by modern sanitation, the extinction of swamps and the presence of efficient medical aid. A further point to bear in mind is the danger from political disturbance. For instance, although Russia is not outside the free limits for existing policies, it would now usually be excluded, or charged for, in the case of a new proposer who had a prospect of going there. The risk from the kind of life led by a settler should also be considered in the case of a pioneer.

It is interesting to note that one company determines extra premiums rather by reference to the occupation of the assured than to the climate of his place of residence. For instance, an extra premium would not be charged for a merchant residing in Bombay, on the grounds that his occupation would be followed in selected areas under favourable circumstances, whereas a big game hunter in India would be charged an extra since, in addition to the accident risk, he would incur all the worst risks of a tropical climate. It will be observed that this line of thought leads in practice to the abolition of extra premiums in the case of the majority of the assuring public—a very convenient arrangement from the business point of view. It would seem, however, that experience hardly justifies the acceptance of lives resident in tropical areas without some extra premium, especially in view of the danger of attracting an undue proportion on account of the favourable terms. It should be added that an exception is made to this practice in the case of the West Coast of Africa, for which from £3 to £5 per cent. is charged according to the district, the extra being payable only during the first five years of assurance. The following notes will supplement, but of course not replace, that detailed information which is to be found in the Geography book.

Asia.

(i) *India and East Indies.*

The experience of the *Standard* Office for the periods 1870 to 1885 and 1885 to 1900 was investigated and laid before the Fourth International Congress of Actuaries by Mr. S. C. Thomson. The ratio of actual deaths to those expected according to the H^M Table diminished from about 1·7 in the first period to 1·3 in the second, showing a marked improvement in the mortality. An important feature elicited was that a significant extra mortality continued after the return to Europe amongst persons who had been resident in India.

Mr. A. T. Winter submitted a paper to the Fifth Congress (see full account in *J.I. A.*, vol. xliii., p. 365) on the experience of the British Empire (now Phœnix) Office. The results may be summarized very shortly in the following extracts from his conclusions :—

(*a*) Selection (*i.e.*, the more favourable mortality of recently assured lives) is not to any degree apparent, as the period of acclimatisation very often coincides with the first few years of a policy's duration.

(*b*) The extra premium required in order to derive Indian from Home rates is more nearly represented by an addition to age (5 years), supplemented by a constant (10s. per cent.).

The Government Actuary's Report on Rates of Mortality in India, dated 1920, is a valuable contribution to Indian statistics, being largely based on the experience of life assurance companies doing business in British India. The following is a summary of his conclusions :—

(*a*) *Indian Civil Service.*—Expectation of life at ages over 30 is approximately equal to the O^M expectation for lives between 2 and 3 years *younger*. In the first few years of service in India the mortality rate is much heavier than after first period of furlough and almost as heavy as for other members of the service 20 years older.

(*b*) *British Officers in Indian Army.*—Before the great war the death rate during the greater portion of service was much heavier than the O^M. After retirement it was about equal to the O^M rate for lives 2 years younger.

The wives and daughters of members of these two services experience lighter death rates than the $O^{[af]}$ Select.

(*c*) *Natives.*—The expectation of life of Mahometans is less than that of Hindus, which is less than that of Parsees. In the case of native government servants effecting endowment assurances, after age 30 the mortality is practically that of the $O^{M(5)}$, but in the case of whole-life policies, the expectation is about that of the $H^{M(5)}$ for an age 5 years older. It is pointed out, however, that Government servants experience lighter mortality than do lives assured in general. It is recommended that for the general body of Indian lives assured after medical examination, for whole-life, with profits, the ultimate mortality should be represented by a standard table with a constant addition to the age (*e.g.*, $+7$ for $O^{M(5)}$, $+6\frac{1}{2}$ for H^M or $+6$ for $H^{M(5)}$—but for endowment assurances less).

India experiences great extremes of climate in different parts, the southernmost point being in the very centre of the tropical region—lat. 8° N.—the most northerly in lat. 37° N. Insurance offices, however, find it more convenient to treat the country as a whole and rarely offer more favourable terms for the temperate parts. In fact it is common to quote the same terms for India, Further India, and the British East Indies. The chief endemic diseases are malaria, asiatic cholera, dysentery, and blackwater fever.

(ii) *Dutch East Indies.*

These comprise Java and Madura, Sumatra, Borneo, Celebes, New Guinea, etc., lying between 6° N. and 11° S. latitude. Some interesting statistics were placed before the Seventh Congress by Mr. Berkhout referring to the period 1899-1910. Amongst Dutch officials there were 180 deaths and amongst active teachers 219 deaths to every 100 expected amongst similar lives in Holland, but in the case of the army the figure was only 115. The mortality was relatively higher at the younger ages, owing to the risks of acclimatisation. The experience of acclimatisation for the period 1890-1910 did not differ much from that shown by Mr. Winter for the period 1872-1902. The general mortality is said to be improving as a result of the struggle against endemic diseases, evacuation to healthier parts at a considerable distance from the coast, the better supply of water for drinking, and in general, of better sanitation in other respects; more frequent stays in mountains or in the mother country; less use of spirits and generally higher standards of conduct. It is suggested that an Indian Mortality Table would be more suitable for life assurance than an adjustment to a home table. The greater mortality among officials *born* in India was probably due to less favourable circumstances of life. The best age to go is not under 25 and retirement to Europe lessens mortality. The mortality amongst the better class women was not higher than in Europe.

(iii) *China.*

(*a*) The Treaty Ports are Hong Kong, Shanghai, Canton, Amoy, Fuchou, Ningpo, Wei-hai-wei, Tientsin, Hankow, Macao, and some others. Civilisation has made great progress in these towns and sanitation is therefore fairly good. Hence lower extra premiums are commonly charged.

(*b*) The remainder of China covers a huge area with every variety of climate. There are no roads, sanitation is bad and political conditions are often unsettled.

Africa.

(i) *West Coast.*—Mr. J. R. Hart has contributed to the *Journal of the Institute of Actuaries* two very interesting notes on Official Returns for the West Coast. The latter shows a remarkable diminution in the rate of mortality per cent. for non-native officials, the figures being 1·82 for the period 1907-11, against 5·2 for the period 1881-90. It is interesting to observe that for the period 1878-90 the rate was 5·1 and for the period 1804 onwards it was 4·7. It would therefore seem that some reduction in current extra premiums is due. It should be carefully noted, however, that the figures only refer to officials, who doubtless live in the best circumstances, in the best places with the best medical aid available. The separate figures for each colony were too small to be reliable but for the year 1911 Gambia showed by far the heaviest rate, being followed in order by Northern Nigeria, Southern Nigeria, Sierra Leone and the Gold Coast. The figures were affected by serious outbreaks of yellow fever in the Gold Coast and the Gambia during the year. Other endemic diseases are blackwater fever, malaria, and other kidney and liver diseases. The reduction in mortality is due to improvements in sanitation, water supply and other conditions.

(ii) *East Africa.*

Kenya Colony and Protectorate (formerly British East Africa). —The climate of the Highlands (say, 4,500 feet upwards) is said to be superb, but malaria is very general. Residence in Nairobi and surrounding highlands is sometimes allowed without extra premium. As regards the lowlands, which lie both on the coast side and the lake side of the Highlands, Europeans must exercise great care and take periodical changes. The coastlands are better than the elevated regions immediately behind them, but are far from healthy, especially southwards.

Uganda Protectorate.—The central and eastern part is distinctly tropical, tempered by the elevation, which is greatest in the south. Generally the climate is pleasant but not altogether healthy for Europeans. Malaria is prevalent in the lowlands. There is no blackwater fever but venereal disease is severe.

Tanganyika Territory (formerly German East Africa).—Runs side by side with Kenya Colony from the East Coast to the great central lakes and has a similar climate.

Nyasaland (formerly British Central Africa).—Is bad for Europeans except in the highlands. The tsetse fly, the carrier of sleeping sickness, is common, but cannot live above 3,500 feet.

Portuguese East Africa.—Is unhealthy owing to malaria. Beira and Lourenço Marques have substantially improved in this respect. The coast is mainly swampy.

(iii) *South Africa.*

Rhodesia is divided by the River Zambesi into two unequal portions. Sanitary measures have made large towns in the southern portion quite healthy. Along the course of the Zambesi malaria is severe, as the low-lying areas of drainage afford a breeding ground for mosquitoes, which carry the malarial germ, and harbour dysenteric and other bacteria. The healthiness of any particular town is largely a matter of the measures which have been taken to deal with swamps. Blackwater fever is not unknown.

America.

West Indies and Central and South America.—The *Standard* Office has investigated its experience in these parts, and, as a result, has divided them into three climatic regions, viz. :—

Class D (½) which includes Barbados and Jamaica.

Class D (1) which includes Trinidad, Haiti, San Domingo, Santa Cruz, St. Vincent, Antigua, St. Kitts, St. Thomas, Tobago, Demerara, Surinam, Curaçao, Dominica, St. Lucia and Granada.

Class D (2) which includes Porto Rico, Martinique, Guadeloupe, Venezuela, Costa Rica, Cayenne, British Honduras and Colombia.

In the first class the extra premium required upon whole-life assurances ranges from 6*s*. 6*d*. at age 20 to 17*s*. at age 50 ; in the second, an additional 6*s*. to 13*s*. is imposed ; while, in the third, the rates are further increased by 8*s*. to 12*s*. per cent.

Since the construction of the Panama Canal the Americans and British have carried out an extensive campaign against the particular mosquito which carries the bacillus of yellow fever and it is confidently stated by those having employees in the districts that yellow fever is now unknown in Panama, British Honduras, Demerara, Barbados, Jamaica and other places under British and American control. It should be observed, however, that the region is still tropical, that mortality is probably still heavy during the period of acclimatisation, and that in many of the smaller islands medical assistance is unobtainable except across the sea from some neighbouring island more fortunately situated.

The northern portion of Brazil is not generally healthy, the lowlands of the interior and coast being excessively moist and hot. Great improvements have taken place in large ports, Bahia, Para and Pernambuco now being reported to be comparatively healthy. The portion from Rio de Janeiro southwards is generally more healthy for Europeans.

Diseases.

Blackwater Fever.—This is endemic to tropical Africa, the southern states of America, the West Indies, Assam and other parts of India. It has been observed in Sicily and Sardinia.

Malaria.—Experienced in almost all warm countries. Prevalence increases the nearer the equator is approached.

Yellow Fever.—Endemic to warm moist climates of Central and South America, West Indies, West Coast of Africa and sometimes found in southern states of North America. Has never been observed east of Italy.

MODIFICATIONS FOR VARIOUS TYPES OF ASSURANCES.

Endowment Assurances.—Extra claims during the term of the assurance are partially offset by reduced claims at maturity. Hence a reduced extra is often quoted for an endowment assurance.

Double Endowment Assurances.—Since the gain on the pure endowment portion roughly balances the loss on the term assurance portion, an increased rate of mortality has little effect on the premium. Hence, publicans, miners, etc., can be accepted without extra for occupation under this class of assurance, and in many instances an extra is not necessary for climate.

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CHAPTER IX.

DISTRIBUTION OF SURPLUS.

By C. H. Maltby, F.I.A.

Under the Assurance Companies Act, 1909, certain returns must be made by every life office to the Board of Trade at least once in every five years.

The Schedules required centre round the Valuation Balance Sheet in the Fourth Schedule (see Appendix A.) which is in the following form.

Valuation Balance Sheet as at..............................19......

Dr.			Cr.
To net liability under Life Assurance and Annuity transactions	£	By Life Assurance and Annuity Funds... ...	£
To surplus—if any	£	By deficiency—if any ...	£
	£		£

If—as is usually the case—a surplus is shown, this is the amount by which the actual funds exceed the sum which it is deemed necessary to hold in hand to meet the liabilities. Hence, this surplus is available for other purposes. It does not necessarily follow, however, that the whole of this amount is available for distribution amongst the participating policyholders. In proprietary companies, the shareholders are usually entitled to some share of the divisible surplus, and apart from this, it may be thought desirable for a portion of the profits to be set aside for the purpose of equalising future bonuses or of providing for a more stringent method of valuation on a subsequent occasion. It is only after such deductions have been made, that the balance of the gross surplus is available for distribution in the form of bonuses to with-profit policyholders.

Intervals between Distributions.—Until 1910, the intervals between successive distributions of surplus varied greatly with different offices. Septennial intervals were favoured by several Scottish offices, while a few companies adopted triennial, or even annual intervals. The period most favoured, however, was five years and this—the longest interval which, under the Assurance Companies Act, 1909, may elapse between successive valuations—is now adopted by most companies. A few companies, however, divide their profits at shorter intervals.

Until 1914 opinions were tending to move in the direction of an annual valuation and distribution of profits; but against this view, it was urged that a longer period secures greater stability and freedom from undesirable fluctuations in bonus results. In the case of a large and well managed office, under pre-war conditions, this consideration had little weight, and a more practical objection was the expense and labour involved in an annual distribution. In view of these drawbacks, of the uncertainty arising from the War and of the almost universal adoption of interim bonuses, it appears that an annual valuation, coupled with a quinquennial distribution of profits, is the system best suited to present conditions. The introduction of modern methods of classification, etc., has rendered it possible to make annual valuations for office purposes and this is now done by many companies. If this course is adopted, the probable amount of surplus available at the end of the quinquennium may be forecast with considerable accuracy, and the sources of profit readily traced and analysed from year to year.

Interim Bonuses to participating policies at maturity are now fixed, in advance, at the commencement of each quinquennium by practically all offices, and provide an excellent alternative to an annual distribution of bonus. Before their adoption, upon a claim arising between two valuations under a participating policy, it did not participate in the accruing surplus, even if the full number of premiums which would otherwise have entitled it to a share in the surplus, had been paid. This was undoubtedly considered a hardship, since it was contended, not unnaturally, that the policy was entitled to the share of the profits earned since the last valuation. On the other hand, of course, the surplus divisible at the end of a distribution period is reduced by interim bonuses paid during the period. The practice of offices as regards interim bonuses varies only in details, and falls naturally into two sections. In the first of these—which comprises the majority of offices—the intermediate bonus is only a proportion of that declared at the last valuation, while in the second class, the full bonus at the rate last declared is allowed. The latter concession is, however, tending to be more generally granted, its adoption in any particular case depending upon the stability of the rates of bonus declared over a series of years, and the reasonable probability that there will be no fall in the rate of bonus at the next distribution.

A few offices distinguish in this respect, between participating endowment assurances maturing by survivance during the inter-distribution period and policies becoming claims by death, by allowing the full rate of bonus last declared in the former case, the interim bonus at death being at a lower rate.

Period before a Bonus vests.—In this respect, also, there is a great divergence of practice amongst offices, the maximum period being five years. The general tendency, however, is to allot bonuses from the outset, although, as a rule, they only vest in the event of death and cannot be dealt with in any way until the policy has acquired a surrender value, which is generally after two or three annual premiums have been paid. Some offices exclude the premium paid for the first year, when calculating the bonus allotted to a policy, on account of the heavy initial expense involved in placing a new assurance on the books; but this practice, through force of competition, is nevertheless rapidly falling into disuse. It is argued that, while it is true that a new policy can earn little—if any—of the surplus and may indeed involve a loss to the office during the first year it is on the books, the initial expenditure is incurred by the office as a whole, and the cost of new business should accordingly be borne by all alike. The initial expenses have been allowed for already in the calculation of the premiums, and it is unjust that the new member should again be mulcted for the expenses involved in procuring his policy by a deduction from his bonus, especially as his entrance presumably benefits the company.

A more practical argument is perhaps that the inclusion of he first year accords with the desires and opinions of the public, ince it is only in the comparatively few cases which become laims shortly after entry that the question seriously affects the otal bonuses added to a policy. If the first year is excluded the bonuses added in subsequent years will be a trifle larger and this will tend to equalise matters.

Sources of Surplus.—In order that the reader may be in a position to understand the principles which lie behind the problem of an equitable distribution of surplus to individual policyholders it is first necessary to explain the sources from which the surplus is derived. It is important, however, to realise the distinction between the real profit accruing to a company from a policy and the surplus shown by a valuation. The real profit arises from the working experience in regard to interest, mortality and expenses proving more favourable than that assumed in calculating the office premiums. If it were possible to forecast this working experience exactly, and to base the valuation upon it, the surplus shown would be the real profit and would be—for each individual policy—a constant cash amount year by year. In practice, however, the valuation basis used is far more stringent than the true basis. That is, the valuation rates of mortality assumed are higher—though this in itself does not mean higher reserves—and the valuation rate of interest much lower, than are likely to be experienced in practice. To some extent, therefore, the surplus brought out by a valuation on the usual lines is artificial and is produced by the variation between the actual experience and that assumed in the valuation. As regards individual policies, the effect of the valuation basis adopted is not so much upon the total surplus produced by the particular policy as upon the time when, and the manner in which, this surplus is thrown off. Under a " non profit " policy, with a valuation based upon the actual experience, the surplus would be practically constant year by year ; and as the valuation basis departs from this standard and becomes more stringent, the later in the life of the policy does the divisible surplus arise and the larger then becomes its amount. This process is necessarily accompanied by a reduction in the surplus during the earlier years ; this reduction likewise becoming larger and more prolonged as the basis becomes more stringent. As regards an Office as a whole, the effect of the valuation basis will depend upon the age of the policies, and the amount of new business transacted, since the effect of a stringent valuation is to cause recently effected policies to show a loss for several years.

In dealing, therefore, with the " Sources of Surplus," it is important to remember that these sources depend upon the valuation used, and that they would be greatly affected by any change in the valuation basis. It is conceivable that two very different bases might produce identical reserves for an office and hence the same surplus. The relative amounts of surplus arising from different sources would, however, differ widely.

With the valuation bases most usually adopted in this country, and under present-day conditions, the sources of surplus are four in number, and may be placed roughly in the order of their importance as follows :—

I.—Interest. III.—Loading.

II.—Mortality. IV.—Miscellaneous Sources.

Dealing with these seriatim—

I.—*Interest.*—This arises mainly from the difference between the rate actually earned on the reserves, after due allowance has been made for income tax, etc., and the rate assumed in calculating those reserves, and also includes the full rate of interest earned on any surplus brought forward, undivided, from previous valuations. In the profit arising from this source may be included that accruing from the realisation of securities at a price higher than that at which they stand in the books, and similar losses will be a deduction from the surplus from interest.

II.—*Mortality.*—This arises from the difference between the rates of mortality actually experienced and those anticipated by the tables used in the valuation. It must be pointed out, however, that the mortality "profit" cannot be gauged by simply comparing the difference between the total amount of the death claims actually arising and those anticipated by the tables in use, as this process does not take into account the reserves held against the policies. The true surplus from this source is found as follows :—

The total amount actually at risk is the difference between the total amount of the sums assured and the corresponding reserve values, or in symbols $\Sigma S_x - \Sigma V_x$, where S_x is the total of sums assured at any particular age x and V_x the corresponding reserves. The expected "death strain" for any particular age is $q_x \times (S_x - V_x)$ where q_x is the rate of mortality expected at age x, and the comparison of the sum total of these amounts, for the whole business, with the difference between the total sum paid in death claims and the corresponding reserves, will show the profit or loss from mortality for the year.

If the expected "death strain" is calculated by an aggregate table of mortality (as is usually the case) a portion of the apparent profit derived from mortality will be due to recent selection, the incidence of the mortality being merely suspended for a time. Theoretically, if it is desired to form a true idea of the actual mortality, the expected "death strain" should be calculated by a select table, *i.e.*, one giving effect to the duration of the policies, as well as the ages attained; but as this is impracticable owing to the labour involved, the fact that a portion of any apparent profit is due to "suspended mortality" must be borne in mind in considering its distribution to participating policyholders.

III.—*Loading.*—This arises from the difference between the loading for expenses set aside at the valuation (see Chapter VI.) and the expenses actually incurred. In other words, it comes from economy of management.

IV.—*Miscellaneous Sources.*—The surplus in this section is far more difficult to allocate as it arises from numerous minor sources—such as surrenders, changes in policies, fines, fees, annuities, etc., and cannot, therefore, be said to belong in any definite proportion to participating policyholders. After, however, setting the surplus from these sources against miscellaneous losses and expenses, the balance will be relatively small, and it will accordingly be sufficient for our present purpose to regard the surplus as arising entirely from the first three sources—interest, mortality, and loading—and to ignore other incidental profits.

Relative importance of the various Sources of Profit.—The relative importance of the various sources of profit will be found to vary considerably in different offices and depends, in addition to the valuation basis, upon the policy pursued and the conditions experienced. Speaking generally, an old office—or rather an office with a large number of old policies—derives most of its profits from interest, while a younger company, although the profit from interest is not so great, derives a compensating benefit from the lighter mortality experienced.

As between different classes of policyholders, it was for a long time an open question whether endowment assurances should receive the same rate of bonus as whole-life policies. It is now, however, generally agreed that under average conditions, no good reason exists for distinguishing between the two classes, provided that the relative rates of premium have been properly adjusted. A few offices, however, have found it necessary to distinguish between the two classes, probably on account of the rates of premium charged. In one or two offices also a uniform reversionary method of distributing surplus is used for endowment assurances, while an older method is still used for the whole-life business. This dual system, has, of course, the advantage that it is not necessary to alter (as regards the latter class) rates of premium which have probably been in use for very many years.

Under an endowment assurance, the surplus from mortality, although comparatively large at first, is relatively (to that of whole-life assurances) small over the whole duration of the policy and rapidly diminishes after the first few years of duration. The surplus from loading during the first quinquennium, is, of course, small owing to the initial expenses involved, but after this period it remains practically constant year by year. The profit from surrenders and lapses should, however, compensate to some extent for the decreased profit from loading for the first few years, since the benefit of surplus from these is felt mainly in the early years, after which it rapidly decreases. The main source of surplus under endowment assurances is, however, interest on the large reserves required, and although small at first, this rapidly increases with the duration of the policy. It counterbalances, in fact, the decreasing contributions from the other two sources, and after the first few years becomes the largest of the three.

Speaking generally, the surplus from interest is derived mainly from policies with large reserves—such as old policies and endowment assurances—while the surplus from mortality arises mainly from whole-life assurances and the more recently effected policies, under which the reserves are small. Theoretically, the loading profit should arise fairly evenly from all classes of participating policies alike, but in practice everything depends upon the relative adjustment of the premiums, and upon the system adopted for distributing the expenses amongst different classes of policies.

Distribution of the Surplus.—As has already been indicated, the amount of profit available for distribution amongst participating policyholders, is, in the first place, ascertained in the form of a cash surplus. The latter may then be dealt with in one of two ways :—

I.—A separate cash allotment can be made to each individual policy, which can thereafter be converted into the corresponding reversionary bonus addition to the policy, or applied in any other way prescribed by the rules of the office.

II.—The cash surplus as a whole may be converted into the corresponding reversionary amount, and declared in the latter form, no separate cash allotment being made to any individual policy. Here the bonus per £100 assured is uniform for the same age and duration, and is a percentage of the sum assured or of the sum assured and existing bonuses.

Under both systems the policyholder has, usually, the options of allowing the reversionary bonus to be added to the amount payable at the maturity of the policy or of taking its equivalent in cash, of applying it in reduction of premium (either for a series of years or for the whole term of the policy) or occasionally of using it in some other way as, for example, to convert a whole-life assurance into an endowment assurance.

Principles upon which the allotment should be made.—Before discussing the merits and details of the various methods of distributing surplus in use amongst life offices, it is necessary to enunciate the main principles which should govern the adoption of any particular method. These are five in number :—

I.—*Equity.*—As far as possible the cash surplus allotted to each policy during its currency should be in proportion to the amount contributed by it to the profits. It may be contended that this principle is fulfilled by any method, since should the younger policies, for instance, receive too much, or too little, this is reversed as their duration increases. On the other hand, a particular system may either favour or be disadvantageous to policies which are discontinued or become claims before the compensating element of time has had due effect. It is, therefore, obviously more equitable that every participating policy should as far as possible receive its proper share of surplus at each distribution throughout its whole duration.

II.—*Simplicity.*—Any system adopted should be easily applied and readily understood by the public. The general tendency amongst offices has undoubtedly been for some time in the direction of rendering the methods adopted as simple as possible, and it is probably to this cause that we must attribute the great increase in the number of offices using one or other of the uniform reversionary methods.

III.—*Flexibility.*—The system adopted should be flexible and readily adjust itself to any changes in the conditions experienced.

IV.—*Suitability.*—It should be in accord with the method of valuation adopted and with the principles upon which the participating premiums have been calculated. By adjusting the bonus loading of the latter any method may be made fairly equitable; but in practice a difficulty sometimes arises when it is desired to alter the method of distribution without altering the tables of premiums which may have been in use for many years. In an extreme case this may be found to be impracticable without great injustice to certain classes of policies, and there is then really no alternative to altering the premiums. In such an event it may be found necessary to start a fresh series of policies at the new rates and to operate the old series as a "closed fund" in order to prevent injustice to the old policyholders. From what has been said above in regard to the sources whence the surplus arises it will be seen that the premiums charged, the valuation basis and the bonus system, are very intimately connected and that they can only be considered as a whole.

V.—*Popularity.*—It is desirable that the system should give reversionary bonuses which increase or at any rate remain constant with the age and duration of the policy, as the public undoubtedly look for such bonuses. This involves an increase—and sometimes a very rapid increase—in the cash surplus allotted to any particular policy at successive distributions.

Methods of distributing Surplus.—In a paper, read in 1891 by Mr. P. L. Newman, before the Insurance Institute of Yorkshire, 76 of the chief "Ordinary" British offices were classified in ten classes, according to their particular method of distributing surplus.

Of these offices, by 1912, 24 had ceased to exist as separate organisations.

Of the remaining 52 offices, 34 adopted in 1912, one or other of the reversionary methods (the number being equally divided between the simple and compound systems—17 in each) as against 27 of the same offices in 1891. The remaining 18 companies still used the method which was employed in 1891, although three of these had adopted the reversionary system for endowment assurances.

Owing to the large number of offices which had ceased to have a separate existence, much weight cannot be given to these figures, which are, however, useful as showing the tendency amongst old-established offices. Eight changes of practice had occurred, five to the compound reversionary method, two to the simple system, and one from the simple to the compound class.

Thus there was evident a distinct tendency amongst the older offices to adopt one or other of the reversionary methods with a strong preference in favour of the compound system.

A similar investigation was made in 1912 for the 5th Edition of this Work and dealt with 68 British offices and 11 established outside the United Kingdom.

Adopting Mr. Newman's classification of methods of bonus distribution, the relative figures for these 68 offices were as given in the following table. Of the 11 colonial and foreign offices, two gave simple reversionary bonuses, while the remaining nine adopted one of the many contribution methods. No doubt these contribution methods were more favoured by the latter offices, on account of the greater differences which existed between the bases assumed in their valuations and calculations and the actual experience.

Industrial offices were included in the figures so far as bonuses declared in the "ordinary" branches were concerned. In addition to the methods shown below, many offices had, and still have, systems of deferred or discounted bonuses, quite apart from their ordinary with-profit business.

	Description of Method.	Number of Offices.
I.	Simple reversionary bonus	30*
II.	Compound reversionary bonus	19
III.	In proportion to premium or loading or modifications of this method	2
IV.	In reduction of premium by an increasing percentage depending upon the duration of the policy	2
V.	Contribution methods	4
VI.	Difference between accumulated premiums and the reserves or a modification of this method	4†
VII.	Amongst policies the premiums on which accumulated at compound interest equal the sum assured	2†
VIII.	In proportion to one-half the number of premiums paid since commencement of the policy	1†
IX.	In proportion to the premiums paid, previous bonuses being taken as new assurances	1
X.	Other systems	3
	Total	68

* Including 12 offices transacting industrial business.

† One office in each of these classes had adopted a reversionary system for endowment assurances.

The outstanding feature of these figures is the large number of offices giving a simple reversionary bonus. This is due to the fact that, almost without exception, ordinary life offices formed during the twenty years ending in 1912, or industrial assurance companies which opened "ordinary" branches during this period, adopted this method—no doubt on account of its simplicity and its general equity when the premium rates are constructed with a view to its adoption. One office, then recently formed, was placed in Class X., as it distributed its surplus in proportion to the reserve values of its policies, after the premiums, accumulated at 4 per cent. amounted to the sum assured—a variety of Class VII.

With regard to the other methods there is very little comment to be made. With the small exception noted above, all those offices not using one or other of the reversionary methods were old-established concerns, the bonus systems of which had been in use for very many years, and these special systems—as well as others now obsolete—and their characteristics, were fully described by Mr. Newman in the paper mentioned above, and by Mr. W. P. Pattison in a paper in vol. ix., p. 341, of the *Journal of the Institute of Actuaries*. It will, therefore, be sufficient to deal here with the uniform reversionary systems, simple and compound, and the various contribution methods.

Uniform Reversionary Bonus.—This has been described as follows :—

"The reversionary bonus allotted is calculated as a percentage per annum on the sum assured only, or on the sum assured and existing bonus additions, for the number of years the policy has been in force, or for the number of years' premiums due and paid, during the valuation period. The bonus allotted at the first distribution after the policy is effected, in respect of the period between the date of commencement of the assurance and the first distribution, in some offices vests at once, no matter how short a time the policy may have been in force; but as a rule there is a period from the date of assurance which must elapse before any allotted bonus vests, a reserve being made at the valuation for the deferred bonuses allotted to policies, which have not yet qualified to participate."

If the bonus is allotted on the sum assured alone it is termed a "Simple Reversionary Bonus;" if on the sum assured and existing bonuses, a "Compound Reversionary Bonus."

As a general rule full effect is given to the exact number of periodical premiums paid in the case of policies effected at quarterly or half-yearly premiums.

The advantages of this system of distribution, whether in its simple or compound form, are its extreme simplicity, the ease with which it is understood by the public and the fact that the cash bonuses corresponding to the reversionary additions increase with the age of the policy.

If the method is to be approximately equitable, however, it is necessary that the premiums for participating assurances should be loaded, with special regard to the system of distribution. Moreover, in ordinary circumstances, the rate of interest assumed in the valuation of reserves should be about ¾ per cent. for a simple bonus, or 1 per cent. for a compound bonus, below that actually realised on the funds.

Between the simple and compound reversionary methods there is very little to choose. The latter is, perhaps, the greater favourite with the public, but on the other hand, it is slightly more complicated and requires a somewhat higher interest margin. In the case of an old-established office, experiencing average results and deriving the larger portion of its surplus from interest, the "compound" system is, perhaps, the fairer of the two, as the benefit of the method is experienced chiefly by the older policies, the heavy reserves under which are mainly responsible for the interest profits. Moreover, the "simple" system ignores the contributions made to the profits by the surplus interest on the reserves held against the bonuses already declared.

Contribution Methods.—These aim at distributing to each individual policy a share of the divisible surplus proportionate to the amount actually contributed by it to the profits during the valuation period. Theoretically, perhaps, these methods are more equitable than the reversionary systems, but in practice they are cumbersome and involve a very large amount of extra labour. They are also difficult to explain to the public, who can much more readily appreciate a bonus which bears some direct relation either to the sum assured, or to the premiums paid. There are, however, circumstances in which the reversionary methods break down, as, for example, when there is a marked divergence between the actual experience of a company and the assumptions made in the valuation or in the construction of the tables of rates; or again, when the latter were framed many years ago with a view to an entirely different system of distribution. Under these conditions one of the contribution methods described below will be found most suitable. They tend, however, to produce somewhat irregular results in certain cases. If there is a wide margin between the rate of interest earned and that assumed, there will appear a large surplus to be divided amongst the policies of comparatively long duration, while, on the other hand, the incidence of a heavy rate of mortality will considerably diminish the surplus allotted to the younger policies. Thus fluctuations in surplus will be borne principally by the latter class. This is not altogether unreasonable; but, at the same time, the possible effect on the new business must be considered.

Both the contribution and the reversionary systems are sound in principle, and the correct method to be adopted in any particular case must depend solely upon the circumstances of the office.

Contribution methods are more generally used in Australia and America than in this country, where at the present day there is a tendency to abandon them in favour of one or other of the reversionary systems. As regards the practical application of the methods, the following are the principal systems, although, as will be seen, the first mentioned is of purely historical interest :—

Sheppard Homans's Method.—This was the original form of the contribution method, as devised by the late Mr. Sheppard Homans of New York. It consists of crediting the assured with the reserve value of his policy at the previous distribution, together with the premiums since received (all accumulated at compound interest), and of charging him with the actual cost of the assurance since the last distribution, together with the reserve at the present time, the rate of interest and mortality assumed being those actually experienced.

The method was extremely complicated and cumbersome, and, moreover, tended to produce irregular results from age to age. In consequence, it was never adopted in this country in its original form. No doubt it was more suitable to the individual system of valuation used in America than to the group system used here. In a modified form it is still used by several American offices.

Dr. Sprague's Method.—This method is briefly as follows: Let the average annual rate of interest actually earned on the funds during the quinquennium be I and the rate used in the valuation be i. Then the interest-profit is $[(1+I)^5-(1+i)^5]\times$ (Reserves at the last valuation). The reserve made at the *last* valuation for each participating policy now in force is multiplied by the factor $[(1+I)^5-(1+i)^5]$, the product being the profit from interest appropriated to the policy in question.

The sum of these amounts having been found, and subtracted from the total surplus divisible amongst participating policy-holders, the balance is divided amongst with-profit policies in proportion to the premiums paid since the last valuation.

Loading System.—Dr. Sprague's method gives equitable results if the premiums are loaded with a constant percentage; but if this is not the case it is generally considered more satisfactory to distribute the second portion of the surplus in proportion to the loading on the premiums, instead of in proportion to the premiums themselves.

This modification is said to have the following advantages over the original method. (Dr. Sprague, in bringing his system before the public, indicated that some modification would be advisable if the premiums were not loaded with a constant percentage.)

I.—The loading system is fairer as between various ages at entry and as between whole-life and endowment policies. The latter fairly take the larger share of the interest-profit; but, if the balance of the surplus is distributed according to the premiums, they again take the larger share of profits, which they have not earned. This is obviated by the use of the loadings instead of the premiums themselves.

II.—The modified method is generally more elastic and fits varying circumstances better.

III.—The surplus, apart from that derived from interest, arises mainly from the loadings, and the latter should accordingly be the basis of distribution.

Browne's Method.—A third contribution method of distributing bonus is that of Mr. T. G. C. Browne.

This differs from that of Dr. Sprague in that the surplus is divided into three groups, instead of only two, as follows:—Group I.—Loading, less expenses and commission, and profit from surrenders and lapses. Group II.—Interest profit. Group III.—Mortality profit, investment profit realised and miscellaneous profits. Group I. is then increased or decreased by its rateable proportion of Group III., and is divided according to the loading received during the five years; while Group II., similarly increased or decreased, is divided according to the reserve value at the *end* of that period.

This modification introduces a compensating element, which renders the method very elastic and enables it to be adapted to varying conditions much more readily than Dr. Sprague's original system.

The system in question was applied by Mr. Browne to his own office with very great success, and since its elastic nature renders it very easily adaptable to varying circumstances, there seems no good theoretical reason why it should not be more generally adopted. It has been contended, however, that difficulties arise if the interest margin is increased (*e.g.* when the valuation rate of interest is reduced from 3 per cent. to 2½ per cent.) as the composition of the groups is fatally affected by the change.

Of the four offices in Group V. (contribution methods) two adopted Dr. Sprague's method, one the "loading" system and one Mr. T. G. C. Browne's method.

Tontine and Deferred Bonuses.—Under the first-named system, which was formerly* very largely adopted in America, the policies are divided into classes and at each distribution a bonus is allotted to a class as a whole. At the expiry of a fixed term the total bonuses in a class are divided amongst the survivors in that

* The issue of policies with deferred profits is now the subject of very severe legislation in North America, and the conditions under which they can be granted are strictly defined.—See Mr. T. Bradshaw's paper, *J.I.A.*, vol. xlv., p. 529.

class, so that the bonus only becomes payable on the attainment of a fixed age, and does not vest in the event of previous death. Another method, which has been applied for many years with considerable success in this country by two companies, is to distribute the profits only amongst those policies under which the premiums paid, accumulated at a certain rate of interest, equal the sum assured. Provided that the premiums are suitably adjusted, both of these methods are, of course, perfectly equitable, the chief advantages involved being the lower rate of premium required as compared with other methods, and the higher bonuses allotted to those policies which survive the period out of a given amount of cash surplus. The systems however, are rather difficult to explain to the public, and the absence of bonuses for many years after a policy has been effected has not rendered them very popular in this country. In America, too, the Tontine system has to some extent fallen into disrepute on account of the grossly exaggerated estimate of future results issued by certain companies. The Deferred scheme is, of course, merely one in which an unusually long period elapses before bonuses vest, rather than a separate and distinct method of distribution.

Bonuses on Industrial Policies.—A comparatively recent innovation is the addition of bonuses to industrial policies. As a general rule, distributions and valuations are made annually, and as no addition for participation in profits is made to the premiums usually charged, the bonus is purely an *ex gratia* addition to the policy. Owing to the nature of the business and the small individual amounts involved, the ordinary methods hardly apply, and hence some more or less arbitrary system—such as increasing by a certain percentage the sums assured under policies becoming claims during the year—is generally adopted.

The question of bonus-distribution is one of the most difficult which insurance officials are called upon to face. From its very nature, anything but the most superficial survey calls for detailed analysis of all the factors involved, as no system can be considered apart from the exact circumstances of the office to which it is to be applied.

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CHAPTER X.

TITLES TO POLICIES OF LIFE ASSURANCE (*a*).

Bankruptcy, Devolution of Title on Death, and Policies under the Married Women's Property Acts.

By H. E. Melville, F.I.A.

However necessary it may be to refer to solicitors complicated points of title arising in life office practice, it will be admitted that there are many legal points which must be dealt with by the insurance official. The modern tendency is to consult the office solicitor less and less, and there are some branches of the law on which his advice is very seldom required. It is to these branches in particular that the following notes refer.

Bankruptcy.

The effect of bankruptcy is to divest the debtor of the whole of his property and to transfer it automatically to the trustee in bankruptcy. The trustee's title dates back to the first available act of bankruptcy but payments made to the debtor after the act of bankruptcy but without notice of it are protected as against the trustee under Section 46 of the Bankruptcy Act, 1914, provided that at the time of payment no Receiving Order has been made against the debtor. A payment made after the date of the Receiving Order, but before the adjudication in bankruptcy is not protected and if an insurance company made such a payment to the debtor it would have no answer to a subsequent claim by the trustee in bankruptcy. This risk can be minimized by searching the bankruptcy records through one of the commercial enquiry agencies with a view to ascertaining whether or not any bankruptcy proceedings have been instituted but probably most insurance companies would regard the expense of making such searches as being out of proportion to their value in ordinary cases and would content themselves with searching only in cases where the amount involved is substantial or where there are reasons to suspect that the policyholder is in financial difficulties.

For many years past the view has been held that when once the debtor has been adjudicated a bankrupt it is the duty of the trustee in order to protect his title to give notice of his interest to the insurance company in any case where a life policy is included in the bankrupt's estate. Some doubt has been cast on this view recently but it is supported by eminent legal authorities, and past experience has shown that the risk of a *bonâ fide* payment being successfully challenged by a trustee who has omitted to give notice of his interest is negligible.

In Ireland, the official announcement in the Gazette, is, *ipso facto*, notice to the company, and no further notice is necessary. It is important, therefore, that before paying a person resident in Ireland, any moneys, whether in settlement of a claim or by way of surrender value or loan, the company should ascertain from one of the commercial enquiry agencies that he has not been bankrupt during the currency of the policy.

The position in Scotland is similar to that in Ireland, with this exception, that a debtor is protected if he makes a payment to the bankrupt in ignorance of the bankruptcy. On a claim arising under a policy, the insurance company is a debtor in respect of the policy-moneys, and is, therefore, protected. In the case of a surrender, the position of the company will depend on the terms of the policy. In many modern policies a definite surrender value is guaranteed from the outset, and, in such cases, it may be fairly argued that the company is a debtor for the amount of the guaranteed value. Where there is no such guarantee; however, the company is certainly not in the position of a debtor, and it is a good working rule to make the search in the case of every surrender or loan transaction.

A discharge in bankruptcy does not operate to divest the trustee of the property which passed to him under the original adjudication. It merely frees the bankrupt from claims by his old creditors, and enables him to start afresh with a clean slate.

Property acquired after bankruptcy by an undischarged bankrupt may be claimed by the trustee, but, until so claimed, remains in the disposition of the bankrupt, so that any person taking such property from the bankrupt *bonâ fide*, and for value, would be fully protected from any claim by the trustee.

Devolution of Title on Death.

On the death of a policyholder the title to the policy passes to his legal personal representatives—that is to say, to his executors or administrators—and the evidence of title to be produced to the company is a grant of representation. The obtaining of such a grant involves the payment of the proper estate duties and certain fees, and often necessitates legal assistance, and, in consequence, the insurance company is sometimes asked to dispense with production of the grant in cases where the estate is a small one, consisting, perhaps, of very little in addition to the policy. The company cannot safely accede to this request, but it can often assist the claimants by referring them to the personal application department at Somerset House. This department issues a very useful Memorandum showing the steps to be taken to obtain a grant of representation with a minimum of expense, and if a copy of this Memorandum be supplied by the company to its client, the courtesy will usually be much appreciated.

In England and Wales, and in Ireland, the grant of representation takes one of the following forms:—

Probate of the Will.—Where the deceased left a will nominating executors, and these executors, or some of them, are willing and competent to act. A copy of the will always accompanies a grant of probate.

Letters of Administration (with Will annexed).—Where the deceased left a will but omitted to nominate any executor, or where the executors are unable or unwilling to act. As the title implies, a copy of the will accompanies the grant.

Letters of Administration.—Where the deceased died intestate.

In Scotland the equivalent of the probate or letters of administration is known as "confirmation."

The legal representatives are known, in each case, as "executors"; "executors nominate" being—as the name implies—those nominated by the deceased's will, and "executors dative" being those whose title is not derived from the will, but is conferred on them by the Court.

A copy of the will is never attached to the Scottish grant, but, instead, an inventory of the deceased's property is given, and the grant is evidence of the title only to the property mentioned in the inventory. If, as sometimes happens, a policy or the bonuses be omitted, a supplementary grant, known as an "eik" must be obtained.

Strictly speaking, an Irish or Scottish grant of representation is not valid in England until it has been resealed in the English Probate Court, and the resealing is absolutely essential in respect of certain classes of property, such as stocks and shares. In the case, however, of life policies, it is usual for the insurance company to dispense with the formality and to set off the risk run in so doing (which appears to be very small) against the convenience to the company and its clients of avoiding the trouble and delay of resealing. In some cases resealing is rendered unnecessary either by the terms of the policy or by the company's private Act of Parliament.

The grant of representation confirms the title of the executors or administrators, but does not operate to transfer any of the property to legatees. Property which is the subject of a bequest passes to the legatee only on the executors either formally assenting to the bequest or executing a specific assignment of the property.

English and Irish executors—when there are more than one—must, for most purposes, join in executing documents or taking any action in connection with the estate. It is true that any one of several executors can give a good receipt for money, but there is no obligation on the part of the debtor to accept such a receipt, and it is usual for insurance companies to require the discharge of *all* the executors before paying any moneys due under a life policy.

Scottish executors may, as a rule, act through a quorum of their number, and a bare majority will form the quorum unless the deceased has left a will limiting the executors' powers in this respect. For example, the will might provide that a two-thirds majority shall be required to form the quorum or that the concurrence of one particular executor in any actions done by the others shall be a *sine quâ non*.

It is not uncommon for the executors of a will to be the trustees also of the deceased's estate, and the question then arises as to whether an insurance company, in making payment under a life policy, should treat the claimants as executors or as trustees. There is little doubt that the company may safely treat them in their capacity of executors and make the payment in the ordinary course of business. It is sometimes, however, thought desirable to treat the claimants as trustees, and, in that case, certain precautions must be taken.

Moneys payable to trustees in England and Wales and in Ireland, can safely be paid only to the trustees themselves, or to a banker or solicitor duly appointed to be their agent. The Trustee Act of 1893 authorises a trustee to appoint a banker or solicitor to be his agent to receive any moneys payable under a policy of assurance by permitting the banker or solicitor to have the custody of, and to produce the policy with a receipt signed by the trustee. The company is not bound to dispense with a written authority, and it is customary to ask for one.

The Trustee Act of 1893 does not extend to Scotland, and there the position is somewhat different. There is no statute bearing on the point, but it is a common practice to hand to the solicitors to the trust a cheque in their favour for the sum due under the policy in exchange for the usual discharge, the fact that the solicitors hold a signed discharge being regarded as equivalent to a mandate. Some offices ask for a written authority in every case, and very rarely find any objection raised by the solicitor. Scottish trustees may authorise any person to receive the sum due to them.

Two Acts of Parliament of considerable importance in connection with the payment of moneys to the representatives of deceased policyholders are the Colonial Probates Act of 1892, and the Revenue Act of 1889.

The first-mentioned Act affords facilities for the resealing, in the United Kingdom, of probates, or letters of administration, granted by a Court of Probate in a British possession, or by a British Court in a foreign country. On resealing, the probate or letters of administration is of the same force and effect, and has the same operation as if granted by a Probate Court in the United Kingdom. As a matter of fact, if the estate be a small one, it is usually cheaper and more expeditious to obtain an entirely fresh grant in this country in favour of an attorney of the original grantee, rather than to have the Colonial grant resealed.

The Revenue Act of 1889 enables an insurance company to pay moneys due under a policy effected by a person dying domiciled abroad, without requiring production of a British grant of representation. At first sight it would seem a simple matter to proceed under this statute, and to pay the moneys to the legal representatives evidenced by the appropriate foreign or colonial grant of representation. It should be borne in mind, however, that the policyholder must have been domiciled abroad at the time of his death, and it is often extremely difficult to obtain satisfactory evidence of domicile which depends largely on the personal intention. If foreign domicile cannot be established (and this is particularly difficult in the case of many emigrants) the only safe course for the insurance company to adopt is to require production of a British grant of representation.

A further point arising in connection with the provisions of the Revenue Act of 1889 is that, if the production of the British grant be dispensed with, the Revenue Authorities here have no opportunity of obtaining payment of the death duties to which the policy-moneys may be liable.

There is little doubt that under Sec. 9 (1) of the Finance Act, 1894, the duties form a first charge on the policy-moneys and at one time the Revenue Authorities sought to make the insurance company responsible for seeing that the proper duties were paid. The Revenue Authorities have now agreed not to press this claim against an insurance company and the general practice is therefore to make payments under the Revenue Act of 1889 without raising any question as to death duties.

An interesting application of this Act will arise when the Irish Free State comes into existence for, while Northern Ireland will remain part of the United Kingdom and the ordinary machinery of the English Courts for resealing Irish grants of representation will remain available, the Irish Free State will not be within the United Kingdom. Payment can, however, be made under a grant of representation issued by the Courts of the Irish Free State, provided that the policyholder dies domiciled in that State, so that as regards life policies no practical difficulties seem likely to arise.

Policies effected under the Married Women's Property Acts.

Under the Act of 1870 which did not extend to Scotland, a woman was permitted to effect a policy on her own life or on the life of her husband. In order, however, for the policy to be part of her separate estate and not subject to the control of the husband, it must be expressed on the face of it to be *for her separate use.*

It was also enacted that a policy effected by a married man on his own life, and expressed on the face of it to be for the benefit of his wife, or of his wife and children, shall not, as long as any object of the trust remains, be subject to the control of the husband or to his creditors, or form part of his estate. The Act provides for the payment of the sum assured under such a policy to a trustee appointed by the Court. This, of course, means expense to the beneficiaries, and, to get over the difficulty, some companies have inserted in their policies a clause to the effect that the legal personal representatives of the assured shall be entitled to give a discharge for the policy-moneys. In the absence of any such provision payment can only safely be made to a trustee appointed by the Court.

No provision is made for the surrender of the policy. There would, however, be little risk in allowing the surrender or conversion into a paid-up policy, on the joint discharge of the trustee (if any has been appointed) and all the beneficiaries, provided the latter are ascertained and competent to give a discharge. The wife's interest in such a policy having arisen prior to the Married Women's Property Act, 1882, it is necessary that her signature to the discharge should be separately acknowledged before a commissioner appointed to take acknowledgments from married women, and that the husband should concur in the transaction.

The surrender or conversion should not be allowed in any case where there is a possibility of further beneficiaries being born, or where any of them are under age, and, therefore, incapable of giving a good discharge. It is true that the granting of a paid-up policy is usually the most suitable method of protecting the interests of the beneficiaries, and that the Court would, as a rule, authorise such conversion on being satisfied that the assured was unable to keep the policy in force. At the same time, it is not for the insurance company to anticipate the sanction of the Court, and to run the risk of one of the beneficiaries subsequently questioning the action of the company in granting the paid-up policy.

The Married Women's Policies of Assurance (Scotland) Act, 1880, extended, with some modification, the provisions of the Act of 1870 to Scotland.

As in the case of a policy effected under the 1870 Act, a policy effected by a married woman on her own life or on the life of her husband, must be expressed to be *for her separate use.*

A policy effected by a married man on his own life, and expressed on the face of it to be for the benefit of his wife or children, or of his wife and children, immediately on its being effected vests in him and his legal representatives in trust for the purposes expressed, or in any trustee nominated in the policy or appointed by separate writing, and the receipt of such trustee for the sums secured by the policy, or for the value thereof in whole or in part is a sufficient and effectual discharge to the company.

The words " or for the value thereof " are important, for the Scottish Court has expressed the opinion that they give the trustee power to surrender the policy during its currency, even without the consent of the beneficiaries, and there is little doubt that they would cover the conversion of the policy into a paid-up policy. It will be noted that the trustee is not appointed by the Court, but by the assured, and that, in the absence of any such appointment, the assured is himself the trustee.

Although a policy effected under the Scottish Act, for the benefit of the wife, may be surrendered, it does not follow that a loan may safely be granted on its security. An important case bearing on the point is that of *The Scottish Life Assurance Company* v. *John Donald, Ltd.* In that case the policy effected for the benefit of the wife was assigned with the concurrence and consent of the wife to secure a debt of the assured. On the death of the assured the wife claimed the policy-moneys on the ground that the policy was a provision for her which she was incapable of alienating during the subsistence of the marriage, and this contention was upheld by the Court. Whilst this decision is probably to be regarded as applicable only to the special facts of this case, and not as capable of general application, an insurance company would be well advised, so long as this decision stands, to refuse to grant a loan on, or indeed recognise an assignment of, such a policy.

A widower has been held to be a married man for the purposes of the Scottish Act of 1880.

The Married Women's Property Act, 1882, like that of 1870, does not extend to Scotland. Under this Act a woman may effect a policy on her own life or on the life of her husband, and such a policy will be free from the control of her husband, even though not expressed to be for her separate use.

A policy of assurance effected by any man on his own life and expressed to be for the benefit of his wife or children, or wife and children, or by any woman on her own life, and expressed to be for the benefit of her husband or children, or husband and children creates a trust in favour of the objects therein named. The insured may by the policy or separate memorandum appoint a trustee or trustees of the policy-moneys. In default of such appointment the policy vests in the assured and his legal representatives in trust.

As under the Scottish Act, the trustee, or the legal personal representatives of the assured are entitled to give a discharge for the policy-moneys, or for the value thereof, in whole or in part. The meaning of the words "or for the value thereof" has not been interpreted by the Court in this country, and, in the absence of any decision on the point, it is usual to ask for the concurrence of the beneficiaries before allowing the surrender of a policy. Where any of the beneficiaries are under age, or where they are not ascertained, an application for surrender is refused.

In order to avoid any difficulty in connection with an application for a paid-up policy, it is desirable to insert a clause in the policy authorising the trustees to effect the conversion. If such a clause be omitted, the application should only be acceded to on the request of the trustee and all the beneficiaries, as in the case of a policy effected under the Act of 1870.

The Act of 1882 speaks merely of a man and woman—not of a married man and married woman. It is considered, therefore, that a single man may effect a policy for the benefit of his intended wife and the children of the marriage.

It has been the practice of some companies, in granting policies for the benefit of the wife alone, to make the policy-moneys payable to her without the intervention of a trustee. It is doubtful, however, whether the company, by so doing, does not make itself liable to the responsibilities of a trustee, and it, therefore, seems desirable to make the policy-moneys payable to the trustee contemplated by the Act. A convenient method of securing that the moneys shall be paid to the beneficiary with as little delay as possible is to appoint her as trustee, and this may be done in the original policy. An even better course is to appoint husband and wife as joint trustees. In the common case of the wife's interest being contingent on her surviving her husband, under such arrangement as is suggested, in the event of her predeceasing the husband, the whole beneficial interest in the policy passes to the husband, who at the same time becomes sole trustee. Similarly, on the death of the husband during the lifetime of the wife, her interest vests and she, as surviving trustee, is entitled to give a discharge for the policy-moneys.

NOTE.—A list of suggested reading in connection with legal matters as they affect Life Assurance appears at the end of Chapter XI.

CHAPTER XI.

TITLES TO POLICIES OF LIFE ASSURANCE (b).

Assignments, Absolute and by way of Mortgage, Assignments on Trusts, Stamp Duties, etc.

By James MacGibbon.

Introductory.

A policy of life assurance is personal property. It does not, however, belong to the more primitive class of personal property, consisting of things, such as clothing, furniture and tools, which are called by lawyers, "*choses in possession*," because we can have not only the ownership, but also the present possession and use of them. In the case of a life policy, we cannot have possession of more than the piece of paper on which the policy is written or printed, and that is only of value to us because it is the evidence of our right to a payment to ourselves, or to our representatives, in a certain event. Until the event happens we cannot obtain possession of the payment, and, if payment be denied, our remedy is an action-at-law. Life policies accordingly belong to the class of things called by lawyers "*choses in action*."

A *chose in action* is not ordinarily assignable at common law, because it was considered to be a contract that was essentially personal in its nature between the original parties. Life policies, however, were freely assigned long before any legislative sanction was obtained, the purchaser or mortgagee relying upon his equitable rights, which were enforced by the Court of Chancery. As the right to sue under a policy remained in the assured, notwithstanding the assignment, the company was not safe in paying on the discharge of the assignee alone, but required the assignor to concur. If any dispute arose necessitating settlement in the Law Courts, the action had to be raised in the name of the original assured, and it was usual in assignments to insert a power of attorney enabling the assignee to sue in the name of the assignor. The necessity for obtaining the concurrence of the assignor in all cases, was put an end to by the Policies of Assurance Act, 1867, by which it was enacted that, subject to certain regulations as regards notice :—

> "Any person or corporation now being or hereafter becoming entitled, by assignment or other derivative title, to a policy of life assurance, and possessing at the time of action brought the right in equity to receive and the right to give an effectual discharge to the assurance company liable under such policy for moneys thereby assured or

secured, shall be at liberty to sue at law in the name of such person or corporation to recover such moneys." (section 1).

The power of an assignee to sue was extended by the Judicature Act, 1873, subject to certain provisions as to notice, to the assignee under "any absolute assignment by writing under the hand of the assignor (not purporting to be by way of charge only) of any debt or other legal *chose in action*" (section 25 (6)). A policy of life assurance is a legal *chose in action*, and it has been held that the Act applies to an absolute assignment even if it is by way of mortgage.

Absolute Assignments for Valuable Consideration.

Titles of this kind do not usually give rise to any great difficulty. It should be seen that the policy is described fully enough for purposes of identification, and that it is absolutely assigned by suitable words that divest the assignor of all his interest. The assignment may be under hand or under seal, and its execution should be attested by a responsible witness. Where the assignment has been made very shortly after the issue of the policy, and without any apparent good reason, it may point to the fact that the policy was really effected by the assignee, and that the transaction is an evasion of the law which requires that a person effecting a policy on the life of another, should have an insurable interest in the life. In this case, as also in the case where the consideration is monetary and differs widely from the surrender value of the policy, enquiry should be made into the circumstances, with a view to ascertaining whether the assignment was in fact for valuable consideration, and was otherwise a *bona fide* transaction. The consideration need not be a monetary one. It may be an agreement to do something that is beneficial to the assignor, or to refrain from doing something that is detrimental to him. It must, however, be a present consideration, *i.e.*, it must not relate to something that the assignee has done or has undertaken to refrain from doing in the past. In all *bona fide* cases of absolute assignment for a valuable consideration, the assignee may give a good discharge for the policymoneys, and otherwise act as absolute owner of the policy. If the assignee is dead, his executors or administrators have in general the same powers, although it is to be noted that executors and administrators have no power to borrow except for purposes connected with the winding up of the estate. It can usually be assumed that they are borrowing for this purpose if nothing appears to the contrary. Where an executor has died intestate, without dealing with the policy, the title does not pass to his administrator (as it would pass to his executor if he had left a will appointing one), and it would be necessary for an administrator *de bonis non administratis* to be appointed to deal with the policy. A similar course is necessary where the assignee dies intestate and his administrator dies without dealing with the policy, as in that case the policy will not pass either to the executor or the administrator of the deceased administrator.

Assignments for Voluntary Consideration.

The most usual case of a voluntary consideration arises when a man makes an assignment to his wife, or to one or more of his children, for natural love and affection. Voluntary assignments, and indeed any assignment, may be set aside for fraud under Statute 13 Eliz. c. 5, which provides that any gift or alienation made to delay, hinder, or defraud creditors or others shall as against such persons be utterly void. If in an action taken under the Statute a transaction were held to be fraudulent it could be set aside by creditors, even although the assignor were not bankrupt, and no matter what time had elapsed since the assignment was made. The purchaser for value of any interest under an assignment is protected if he has no notice of the fraud, and the payment of the policymoneys by an assurance company would be good, if made before the transaction was set aside and without notice of the fraud. A voluntary assignment may also be set aside under section 42 of the Bankruptcy Act, 1914, as it is on the same footing as a voluntary settlement for the purposes of that section. The section provides that if the settlor becomes bankrupt within two years after the date of the settlement it shall be void against the trustee in the bankruptcy, and that if the settlor becomes bankrupt at any subsequent time within ten years after the date of the settlement, it shall be void as against the trustee in the bankruptcy, unless the parties claiming under the settlement can prove that the settlor was at the time of the settlement able to pay all his debts without the aid of the property settled, and that the interest of the settlor in such property passed to the trustee of the settlement on the execution thereof. It has been held, however, that the term "void" means "voidable" and not "absolutely void," and that the title of a purchaser for value who had no knowledge of an act of bankruptcy committed by the voluntary assignor, was good as against the trustee in his bankruptcy. An assurance company dealing with a voluntary assignee would therefore be protected as against the trustee of a subsequent bankruptcy, if it had no knowledge of an available act of bankruptcy. Even if the assignor had become bankrupt between the date of the voluntary assignment and the date of the payment in respect of it, there is good authority for supposing that the company would be protected. If, however, the company had knowledge of the previous bankruptcy, or of a recent act of bankruptcy under which the assignor might be made bankrupt, it would be desirable to proceed with great caution, and it would be usual to ascertain by searching that there was nothing recorded against the assignor before completing any transaction. In the case of a deceased assignor by a voluntary deed who has not been made bankrupt during his lifetime, and whose estate is being administered in bankruptcy, the Official Receiver is entitled only to the estate which belonged to the deceased at the date of his death, and cannot therefore set aside a voluntary assignment under the provisions of section 42 of the Bankruptcy Act. It is to be noted that assignments for nominal or inadequate consideration may be held by the Courts to be voluntary in their nature, and that they are accordingly liable to be set aside in favour of the creditors, or of the trustee in bankruptcy, of the assignor.

Assignments on Trusts.

The most usual case of a trustee being interested in a policy arises in connection with an assignment on the trusts of a marriage settlement. Where the assignment is post-nuptial it ranks as a voluntary assignment, and the remarks as to the avoidance of assignments under Stat. 13 Eliz. c. 5 and under section 42 of the Bankruptcy Act, 1914, referred to under the heading "Assignments for voluntary consideration", apply. Where the settlement is an ante-nuptial one the marriage is a good consideration, and no question of avoidance usually arises. Even an ante-nuptial settlement, however, may be questioned on the ground of actual fraud. Thus if the settlement and the policy had not been delivered to the trustee and no notice had been given to the company at the time the settlement was made, a presumption of fraud might arise. As in this case the deed would be granted for a good consideration, it would be necessary to show that the beneficiary as well as the settlor was a party to the fraud. Again, if the settlor or his prospective wife had, at the date of the settlement, no right or interest in the property settled and the settlor became bankrupt before the property had been actually transferred pursuant to the contract, it would be void against the trustee in bankruptcy. The trustees have no power to surrender the policy or bonuses, to borrow on the security of the policy, or even to take a paid-up policy, unless there are express powers contained in the settlement or unless they obtain an Order of the Court. In some cases where these powers are not contained in the settlement and where no funds are available for keeping up the policy, considerable hardship arises, and it is sometimes possible, when the beneficiaries are all of full age and there is no possibility of further beneficiaries, to allow the policy to be surrendered or converted into a paid-up assurance on the discharge of the trustees, the husband and wife, and the other beneficiaries. This can only be done in cases where the facts as to the number and ages of the beneficiaries can be vouched for by Statutory Declaration or otherwise, and where the wife, if alive, is not restrained from anticipation. It is advisable in certain cases to stipulate that the wife, and the younger beneficiaries, particularly female beneficiaries, should have separate legal advice before they enter into the transaction. It would be usual also to require an indemnity. On the payment of the policymoneys, the trustees, or the survivors or survivor of them, or the executors or administrators of such survivor (if they are acting in the trust), can give a good discharge, subject, of course, to any special provisions in the particular settlement. If new trustees have been appointed it should be seen that the policy has been assigned to them by the previous trustees, or that the appointment contains the usual declaration vesting the policy in them.

The Trustee Act, 1893, provides for the appointment of a new trustee in place of one who is dead or who has remained out of the United Kingdom for more than 12 months, or who desires to be discharged, or refuses or is unfit to act. The appointment has to be made by the persons nominated in the settlement for the purpose, and, failing any such nomination, by the surviving or continuing trustees or trustee for the time being, or the personal representatives of the last surviving or continuing trustee. It is provided, however, that unless there was only one trustee of the original settlement, no trustee shall be discharged unless there will be at least two trustees to perform the trust. Reference should be made to the statement in Chapter X. as to the circumstances in which trustees may authorise third parties to receive payments on their behalf.

Assignments for Benefit of Creditors.

As an assignment for the benefit of creditors generally, is an act of bankruptcy in respect of which the assignor may be made bankrupt within three months, and as the title of the trustee in a consequent bankruptcy dates back to the act of bankruptcy, it was formerly necessary to wait for three months after the date of the deed before allowing the trustee for creditors to deal with any life policy included in the assignment. Under section 10 of the Bankruptcy and Deeds of Arrangement Act, 1913, a payment made either pursuant to the ordinary course of business or otherwise *bona fide* to a person subsequently adjudged bankrupt, or to a person claiming from him, was declared to be a good discharge, if made before the date of the Receiving Order and without notice of the presentation of a bankruptcy petition. This section was repealed by the Bankruptcy Act, 1914, but was virtually re-enacted by section 46 of the same Act. Consequently a payment to a trustee for creditors is good if made in accordance with the terms of the Act.

By the provisions of the Deeds of Arrangement Act, 1914, a deed of arrangement is void unless certain conditions are fulfilled, and it is important that the company should have evidence that these conditions have been complied with before the trustee is allowed to deal with a policy included in the deed. The conditions are :—(1) that the deed should be registered with the Registrar of Bills of Sale within seven clear days after execution (section 2) ; inspection of the deed will show whether this has been done : (2) that if the deed is for the benefit of creditors generally, it should within 21 days after registration have received the assent of a majority in number and value of the creditors (section 3 (1)) ; it is provided that the trustee shall file with the Registrar of Bills of Sale at the time of registration, or in the case of a deed of arrangement assented to after registration, within 28 days after registration, a statutory declaration by himself that the requisite majority of creditors has assented (section 3 (4)) ; the statutory declaration will be conclusive evidence on this point : (3) that the trustee shall within seven days from the date on which the statutory declaration certifying the assent of the creditors is filed, give security in the prescribed manner to the Registrar of the Court, unless the creditors dispense with it (section 11 (1)) ; on failure to comply with this requirement, the Court may declare the deed void, or may make an Order appointing another trustee (section 11 (2)) ; a certificate from the Registrar will be conclusive evidence on this point. Subject to satisfactory evidence that these requirements have been fulfilled and to any special provisions in the deed itself, the trustee under a deed of arrangement can in general deal with the policy as an absolute owner.

Mortgages.

A mortgage is a transaction by which an interest in some property belonging to the mortgagor is vested in the mortgagee as security for a loan, the property being redeemable on the mortgagor's repaying the loan to the mortgagee, in accordance with the terms, expressed or implied, that govern the transaction. The transaction may be a legal mortgage containing a conveyance or assignment of the legal estate, or it may be an equitable mortgage not containing such conveyance or assignment. The reason for an equitable mortgage may arise from the necessity of the case, as *e.g.*, when the legal estate is already held by a prior mortgagee and the mortgagor cannot therefore give it to anyone else ; or it may arise from the form of the document, as in cases where there is no assignment of the property, but merely an agreement to execute such an assignment when called upon, or where the mortgage is only by deposit of the title deeds, with or without a written memorandum of deposit. Prior to the Policies of Assurance Act, 1867, a mortgagee of a policy could not sue in his own name and an assurance company, therefore, was not safe in taking his sole discharge for the policymoneys or surrender value, no matter what powers were given to him in the mortgage deed. The Policies of Assurance Act, however, applies to mortgages, and since 1867 any mortgagee who has the right in equity to receive the policymoneys and the right to give an effectual discharge to the company, can sue in his own name, provided he has given the requisite notice. Accordingly if the mortgage deed includes a power to give a discharge for the policymoneys, or to surrender the policy, the mortgagee's sole discharge can be accepted. Even in cases where the mortgage does not expressly confer these powers, the mortgagee has power under the Conveyancing and Law of Property Act, 1881, (section 19 (1)) when the mortgage money has become due and the mortgage is by deed dated after 31st December, 1881, to sell the mortgaged property, if no contrary intention is expressed in the deed. This power cannot be exercised until notice requiring payment of the mortgage money has been served and default has been made in the payment for three months after such service, or until some interest under the mortgage is in arrear and unpaid for two months after becoming due ; or until there has been a breach of some other provision contained in the deed (section 20). The mortgagee has also power to give a discharge for any money or securities comprised in the mortgage (section 22 (1)). It is further provided that a person making a payment to the mortgagee shall not be concerned to enquire whether any money remains due under the mortgage (section 22 (1)), and that the title of a purchaser, where the conveyance is made in professed exercise of the power of sale conferred by the Act, shall not be impeachable on the ground that the power was improperly or irregularly exercised (section 21 (2)). It is doubtful, however, whether a purchaser who had not obtained a formal conveyance of the property would be protected, and an assurance company allowing a policy to be surrendered under the power of sale conferred by the Act, should therefore ask for evidence that the power of sale has arisen. The question as to whether the power of sale conferred by the Act includes power to surrender the policy to the company that issued it has occasioned some difference of opinion. There is no doubt, of course, that if the company took an assignment of the property in the same way as an ordinary purchaser, the transaction would be good and the company could then write off the policy as surrendered in its books ; but where the ordinary form of surrender is used instead of a formal assignment, it is held by some lawyers that the transaction may not be considered a proper exercise of the power of sale contained in the Act. It is advisable, therefore, in such cases to obtain the consent of the mortgagor so as to avoid the risk of an adverse decision. In most modern deeds the difficulty has been met by the insertion of a clause providing that the power of sale conferred by the Act shall include a power to surrender the policy to the issuing company, and in this case the discharge of the mortgagee can be accepted without any question, provided evidence has been given that the power of sale has arisen, unless the deed provides that this shall be unnecessary.

It will be convenient at this point to state the powers of a mortgagee of a life policy under the various forms of mortgage that arise. Where the mortgage is dated prior to 31st December, 1881, the mortgagee to whom the policy has been assigned can exercise the powers expressly conferred upon him by the mortgage deed. In the case of an assignment by way of mortgage under seal and dated after 31st December, 1881, the mortgagee can in exercise of the powers conferred by the Conveyancing Act, sell the policy or give a discharge for the policymoneys. When the document is an equitable charge under seal dated after 31st December, 1881, the mortgagee has like powers, but it is to be observed in this case that as he has never acquired the legal estate, he cannot pass it on to a purchaser. When the mortgage contains an assignment of the policy but is not under seal, it is doubtful whether the mortgagee can give a discharge for the policymoneys under the Conveyancing Act, because, although section 22, which confers that power, is not expressly limited to mortgages by deed, it is linked up with section 19 which is so limited. Under section 25 (6) of the Judicature Act, 1873, which has been held to apply to absolute assignments by way of mortgage and is not limited to mortgages by deed, a mortgagee holding an assignment under hand can give a discharge for the policymoneys. This Act, however, does not confer a power of sale, so that unless the mortgage contains an express power, the mortgagee cannot sell without the consent of the mortgagor. In the case of an equitable mortgage under hand, the mortgagor, or his representative, must join with the mortgagee in giving a discharge for the policymoneys, or in selling or surrendering the policy. If, however, it were decided that section 22 (1) of the Conveyancing Act were not limited to mortgages by deed nor to mortgages made after 31st December, 1881 (both of which limitations can only be read into it by supposing that the whole subsection refers to mortgagees that have the power of sale conferred by the Act), every mortgagee, whatever the date of his deed, and even an equitable mortgagee whose document was under hand, would presumably have power to give a discharge for the policymoneys. Where a transferee or sub-mortgagee is selling or surrendering under the express power contained in the deed, it is necessary to see that the power of sale or surrender was given not only to the original mortgagee, but to his assigns. The statutory power of sale conferred by the Conveyancing Act, however, may be exercised by any person for the time being entitled to receive and give a discharge for the mortgage money.

In what has been said hitherto it has, for the most part, been assumed that there is only one mortgage. Where there are other mortgages that admittedly rank after the first mortgage in respect of which the claim is being made, it is unnecessary to go into the title of the subsequent mortgagees, but it is usual to advise the first mortgagee of the notices of subsequent mortgages that have been received, as it is his duty to apply any surplus remaining, after his own claim has been satisfied, to the discharge in the first place of the subsequent mortgages. It may also be advisable in certain cases to notify the subsequent mortgagees of the payment to the first mortgagee. Where there are competing claims between different mortgagees, many difficult questions arise that cannot be dealt with here at any length. It may be pointed out, however, that the party who first gives notice of an assignment or charge in his favour is entitled to priority in equity against a purchaser or chargee of an earlier date of whose interest he was not aware. In *Re* Weniger's Policy (1910) (2 Ch. 291), Justice Parker said :—

" It is clear that in the case of *choses in action* such as policies " the priorities of equitable encumbrancers are determined in " default of their gaining priority by giving notice, by the order " of the dates of their charges. It is equally clear that where " there is a trustee or other person to whom notice can be given, " which has the effect of restraining him from parting with the " money in his hands, priority is *prima facie* determined by the " order of notice."

It does not follow from this that the assurance company would be safe in paying the party that first gave notice, if before payment the existence of other assignments or charges prior in date had come to its knowledge. The right to sue in his own name conferred on a mortgagee by the Policies of Assurance Act is dependent on his having at the time of action brought, both the right in equity to receive and the right to give an effectual discharge to the assurance company for the policy-moneys. If there are two mortgagees and the first in point of time has not a formal assignment, and has not therefore the right to give an effectual discharge to the company for the policy-moneys, while the other has a formal assignment but, as he is second in point of time, has not the right in equity to receive the policymoneys, a legal discharge cannot be given by either or both of them, under the Policies of Assurance Act, since the right to sue remains in the mortgagor, who should accordingly join with both mortgagees in giving the discharge. The same result follows where there are two mortgagees and the second in point of time has given notice before the first. It is true that the right to sue conferred by the Judicature Act, 1873, does not expressly require that the assignee shall have the right in equity to receive the mortgage moneys, but only that he shall have an assignment in writing which is valid in equity as between the assignor and assignee, and that he shall have given express notice in writing to the debtor. It does, however, provide that the legal right shall pass subject to all equities that would have been entitled to priority over the right of the assignee if the Act had not been passed. The company is not usually in a position to say whether the title of the claimant who gives notice first is or is not subject to an equity in respect of a transaction, prior in time, of which notice was afterwards given, because the claimant may have known of the prior charge when he took his assignment, and, if so, would not be entitled to priority. In such a case therefore the company should ask for the discharge of both mortgagees, but it would appear that the discharge of the mortgagor could be dispensed with. It is to be noted, however, in this connection that the Judicature Act deals with debts and other legal *choses in action*, generally, and that it is perhaps doubtful how far the provisions of that Act would be held to vary the provisions of the Policies of Assurance Act which refers specifically to life policies.

Assignments to Two or More Persons.

Where an assignment has been made to several persons either absolutely or by way of mortgage, and it is clear, from the terms of the assignment or otherwise, that the transaction is on a joint account and not in shares, and one or more of the persons is dead, it is safe on proof of the deaths to take the discharge of the survivors or survivor, or of the legal personal representative of the last survivor. If, however, the assignment shows that the assignees were not joint tenants but tenants-in-common, *e.g.*, if they were mortgagees who had advanced the mortgage money in specified shares, the discharge of the personal representatives of the deceased assignees should be taken in addition to the discharge of the surviving assignees. Even in cases where there is nothing to show whether the assignees are joint tenants or tenants-in-common, it would be usual in the case of a mortgage after 31st December, 1881, to treat them as joint tenants, relying on the authority of section 61 of the Conveyancing Act, and to take the discharge of the survivors. It is to be noted, however, that in many of these cases the mortgagees are trade partners and therefore presumably tenants-in-common, and in such cases it would usually be advisable to obtain the discharge of the legal personal representatives of the deceased partners.

Assignments by Operation of Law.

The most frequent examples of assignments by operation of law, viz., the devolution of title to the executors or administrators on grant of Probate or Letters of Administration, and the assignment of the debtor's *choses in action*, which is one of the results of an adjudication in bankruptcy, have been dealt with in the preceding chapter. Other examples are to be found in connection with the disability of lunatics and convicts to deal with their property. In the case of a convict, the Home Secretary may, under the provisions of the Forfeiture Act, 1870, appoint an administrator who will then have power to deal with the convict's property. Production of the certificate of the administrator's appointment will be the proof of title required. The convict's property will vest in him, or in his legal personal representatives, on his death, or the expiry of his sentence, or the grant of a pardon.

In the case of a lunatic so found by inquisition, the Judge in Lunacy may appoint a committee, and in the case of a lunatic not so found by inquisition, appoint a person with the powers of a committee to manage his affairs. Moneys that would become payable to the lunatic but for his state of mind, such as policy-moneys payable on the maturity of an endowment, would generally be paid to the committee or the person acting as such, on proof of his appointment, but a specific order of the Court would be required for other dealings with the lunatic's property, such as the surrender of a life policy. In such dealings it should be ascertained that the committee has found the security which is usually required by the Court. On the death of the lunatic the powers of the committee cease, and the property is dealt with by the lunatic's legal personal representatives. It is to be noted that the payment of policymoneys or of the surrender value of a policy to a person who was insane, would be a sufficient discharge if the company did not know of his condition. If the insanity were known to the company the payment would not be valid, and the company should therefore defer the completion of the transaction until the appointment of a committee, or person acting as a committee, who was legally entitled to act for the lunatic.

Persons Under Disabilities.

Infants.—If a policy be effected by a person under the age of 21, the contract is binding on the company, but like other contracts with infants, except in certain cases such as contracts for necessaries, it is voidable by the infant. A life policy would appear to belong to that class of contracts by which the infant is bound after the age of 21, unless he expressly disclaims them within a reasonable time, so that his continuing to pay premiums after attaining his majority would presumably bar any future avoidance of the contract by him. As there is no obligation on the part of the infant to pay the premiums in respect of the policy, his power to repudiate the contract would be of importance to the company only if it were held that he was entitled to a return of the premiums already paid. It has been decided that if an infant buys, uses and pays for goods which are not necessaries, he cannot recover the money he has paid, and although we are not aware that the question has ever been decided in reference to a life policy it would appear by analogy, that if an infant bought and paid for a life policy and had the benefit of the protection it afforded, he could not on repudiating the contract recover the premiums he had paid. There seems, however, to be some difference of opinion as to the probable decision in such a case should it arise. Difficulties occur also when an infant wishes to surrender a policy or convert it into a paid-up policy during his minority, as he has no power to give a discharge until he attains the age of 21. The surrender value could, of course, be retained at his credit until his majority, but in some cases by the operation of an automatic non-forfeiture regulation, the surrender value would be decreased or exhausted by that time. It would seem advisable in issuing policies to infants to provide for their automatic conversion into paid-up policies on the cessation of the payments of premiums, so that the minor could, if he wished, take the surrender value on reaching the age of 21.

Married Women.—The question of the disabilities of married women in dealing with life policies now only arises in connection with policies effected or acquired by them before 1st January, 1883, when the Married Women's Property Act, 1882, came into force. A married woman who effected or acquired a policy before 1st January, 1858, cannot deal with it during the lifetime of her husband unless it was settled for her separate use or was purchased by her out of property so settled. A policy effected or acquired by a married woman between 31st December, 1857 and 9th August, 1870, and not settled for her separate use or purchased by her out of property so settled, can only be dealt with by her in the lifetime of her husband in the manner described in Malin's Act, 1857, viz., by a deed granted with the concurrence of the husband and subsequently acknowledged by the wife in the manner required by the Fines and Recoveries Act, 1833, *e.g.*, before two Commissioners appointed for the purpose or (if after 31st December, 1882) by one Commissioner. A policy effected between 8th August, 1870 and 1st January, 1883, by a married woman on her own life or on the life of her husband and expressed to be for her separate use may be dealt with by her as if she were a single woman. If the policy was not expressed to be for her separate use or if it was not purchased out of property settled to her separate use, she cannot deal with it in the lifetime of her husband whether it is a policy on her own life or on the life of her husband, or a policy effected or acquired by her on any other life, except in the manner described in Malin's Act and its amendment already referred to. Any policy effected on or after 1st January, 1883 by a married woman on a life in which she has an insurable interest, and any policy acquired by her on or after that date can be dealt with by her without the concurrence of her husband. She can also deal with any policy, effected or acquired by her before that date, if it was settled for her separate use, or purchased by her out of property so settled.

Settlement of Claims, etc.

It may be useful to consider some of the questions not hitherto dealt with that are likely to arise in connection with the settlement of claims under life policies, the granting of paid-up policies in lieu of existing contracts and the surrender of policies or bonuses. If any notices of assignment have been received in respect of the policy, all relative deeds or documents should be asked for, with the exception of documents that are clearly of the nature of second or subsequent mortgages. On the completion of the transaction, if it involves the cancelment of the policy, the documents that refer only to the policy are usually retained by the company, but this cannot be insisted upon, especially in the case of a mortgagee who may require the documents in connection with the settlement of accounts between himself, the mortgagor and subsequent mortgagees. In cases where the documents cannot be retained by the company for this reason, or because they refer to other property, it is usual to obtain an acknowledgment of the company's right to their production. This would seem to be a reasonable precaution having regard to the fact that, after payment, the company might have to contest a claim by other parties claiming to be interested in the policy, and might require the documents to prove that it had obtained a legal discharge. In the case of Dockray *v.* Refuge Assurance Co. (1912), however, Justice Coleridge held that the person who could give a legal discharge need do no more. Evidence was brought to show that it was an established custom to ask for an acknowledgment, but the judge was not convinced by the evidence. There is little doubt, however, that the existence of such a custom could be proved if necessary. The policy should be given up to the company on settlement of the claim or surrender, and it should be produced on the application for a paid-up assurance or a surrender of bonus. A difficulty frequently arises from the fact that the policy or some other of the documents of title is stated to have been mislaid or destroyed. In such cases the parties should be urged to make a thorough search for the missing documents, and as a result the documents, even in cases where they are said to have been destroyed, are often forthcoming. The notices of assignment filed at the office often contain information that may lead to the discovery of the missing documents. It frequently happens that the documents refer to other property besides the policy and that they are in the hands of the parties that are interested in such property. If in the result the missing documents are not forthcoming the procedure will vary according to the circumstances. The most usual case is that of documents in connection with a closed transaction. If the missing document is a mere memorandum of deposit and notice of its cancelment has been received, or can be obtained from the depositee, it is a matter of little importance. If the missing documents are an assignment by way of mortgage and the relative reassignment, and if the evidence is clear either from the notices to the company or otherwise that the mortgage money has been repaid and the policy reassigned to the mortgagor, it would usually be sufficient to complete the transaction on the discharge and indemnity of the applicant. Where the document missing is that under which the applicant claims to be entitled to the policy, or is a necessary link in the chain of his title, the case is more serious, particularly if an acknowledgment of the transaction and a disclaimer of interest cannot be obtained from the person granting the assignment or from his representatives. It would appear that in these circumstances the applicant has failed to prove his title, and that the company would be justified in refusing the application or, in the case of the policymoneys being payable, in paying the money into Court, on the ground that it could obtain no sufficient discharge. It is advisable, however, to avoid this extreme step and in many cases it is possible to obtain by statutory declaration of persons well acquainted with the facts, supported by such documents as are available, fairly satisfactory evidence that the matter is in order. The transaction could then be completed on the discharge of the applicant, accompanied by an indemnity. The indemnity asked for would vary according to the circumstances and might be that of the applicant, alone or with substantial sureties, or it might be an indemnity by a company doing that class of business. It is to be remembered that when the policy or any important document of title is missing, its non-production may in certain circumstances be held to have been constructive notice of some assignment or charge of which formal notice had not been given to the company. Any declarations obtained should therefore expressly state that the policy had not been assigned or charged to any party other than those known by the company to be interested. Where the policy is missing an indemnity would usually be asked for, and where the giving up of the policy on cancelment is stipulated for in the policy there is no doubt that the company is entitled to an indemnity. If there is no such stipulation the case is more doubtful, but having regard to the fact already mentioned that its non-production might be held to charge the company with constructive notice that it had been dealt with, the company would be entitled to make the fullest enquiries as to the circumstances and the applicant would probably save time and trouble by agreeing to give a suitable indemnity.

It often happens that an assignment of a legal mortgage is produced without any relative reassignment, but merely a receipt endorsed on the mortgage stating that all moneys due have been repaid. Strictly, a reassignment should be executed, as otherwise the right to sue remains in the mortgagee and does not pass to the mortgagor or any person subsequently claiming under him, who would not therefore be able to give the company a legal discharge. It is very usual however, to overlook this defect in cases where the policy is being cancelled by surrender or by payment of the policymoneys. Where, however, as in the case of a conversion into a paid-up policy, a loan by the company on the security of the policy, or a surrender of bonus, the policy is not cancelled, it would be usual to insist on a reassignment.

Investigation of Title During the Currency of the Policy.

Occasionally application is made during the currency of a policy for a statement that the title is in order. It has been decided (Allgemeine Deutsche Credit-Anstalt and ors. *v.* The Scottish Amicable Life Assurance Society and ors. (Scots *Law Times* XIV., 775 and XV., 427) that parties interested in a policy are not entitled to a declaration of their right to a policy not immediately enforceable, and such applications should always be refused. There is no objection, however, to investigating the title at the expense of the applicant and making a guarded statement to the effect that in the opinion of the company's solicitors, having regard to the notices of assignment at present before the company, and to existing legal decisions, the title of the applicant appears to be in order.

The Courts (Emergency Powers) Acts.

Although the Courts (Emergency Powers) Acts will have ceased to be in force by the time these notes appear, they will still be of some importance in regard to acts done while they were in operation. The Courts (Emergency Powers) Act, 1914, provided that after 31st August, 1914, no person should, without an Order of the Court, enter into possession of any property, or foreclose upon or realise any security (except by way of sale by a mortgagee in possession) in respect of a contract made before the 4th August, 1914. The Courts (Emergency Powers) (Amendment) Act, 1916, provided that the foregoing provisions in the principal Act should have effect in favour of officers and men of His Majesty's forces in respect of any contract made before the 11th April, 1916. Some doubt having arisen as to the meaning of the term "mortgagee in possession" the Courts (Emergency Powers) (No. 2) Act, 1916, provided that the expression "mortgagee in possession" should include a mortgagee who before the passing of the principal Act appointed a Receiver who was still in possession or receipt of the rents or profits of the mortgaged property, but should not include a mortgagee of property (other than land or some interest in land) except in any case where the power of sale had arisen, and notice of the intended sale had been given prior to the 4th August, 1914. By the Courts (Emergency Powers) Act, 1917, it was provided that the 1914 Act should have effect in favour of officers and men of His Majesty's forces, in reference to any sum of money due and payable in pursuance of a contract made before the officers or men joined His Majesty's Forces. The operation of these Acts was limited to the continuance of the war and a period of six months thereafter, but by the War Emergency Laws (Continuance) Act, 1920, their operation was extended to the expiration of a period of twelve months after the termination of the war. By the same Act, the provisions in favour of officers and men of His Majesty's forces were extended, and were deemed always to have extended, to persons who, having served as officers or men in any of His Majesty's forces during the war, had ceased to be members of these forces, for a period of six months after the date when they so ceased, but in no case beyond the expiration of twelve months after the termination of the war. The official date for the termination of the war was 31st August, 1921, and accordingly all transactions between 31st August, 1914, and 1st September, 1922, that are not in accordance with the Courts (Emergency Powers) Acts are invalid.

Conflict of Laws.

Hitherto we have been considering only policies that have been effected and are payable in England or Wales to persons domiciled there, and that have been dealt with in accordance with English law. Where policies have been granted to persons domiciled elsewhere than in England or Wales, or where they have been dealt with in accordance with foreign law, many difficult questions arise that cannot be considered here at any length. Leaving aside the cases in which companies issue policies through large foreign agencies, with the understanding that the contracts shall be governed by the foreign law, it may be said that where a company domiciled in England issues a policy to a person domiciled elsewhere, without any agreement expressed or implied, that the payment is to be made in the foreign country, the policy is an English contract, and all questions relating to its interpretation, except possibly questions of status and capacity to contract, as in the case of infants and married women, are to be governed by English law. Such policies, however, may be and frequently are the subject of dealings between persons in a foreign country, by documents drawn up in accordance with the laws of that country. These documents constitute foreign contracts and are to be interpreted in accordance with the foreign law. In all such cases, questions, whether as to the validity of the documents or as to the capacity to contract, would be decided in the English Courts in accordance with the foreign law where that was applicable. Such documents should therefore be valid in accordance with the law of the country in which they were executed.

Scotland.—The only particular case that we can deal with here is that of Scotland which for purposes of private international law is a foreign country. Legal documents in Scotland are not executed under seal except occasionally in the case of Limited Companies and Corporations. They should be signed at the foot of every page and, unless they are expressed to be holograph (*i.e.*, entirely in the handwriting of the granter), or adopted as such by him, they should be attested by two witnesses. Execution of the document by mark is not permissible in Scotland, and if the granter cannot write, the document should be signed on his behalf by a Notary Public, or Justice of the Peace, before two witnesses. The Conveyancing Act, 1881, does not apply to Scotland and assignations in security (the Scottish equivalent of the English mortgage) convey no powers to the assignees other than those expressed in the document itself. Equitable mortgages are unknown in Scotland, and a lender acquires no interest in a life policy merely by having it deposited with him by a borrower. It does not follow, however, that a Scottish policy cannot in any circumstances be the subject of an equitable mortgage, because if such a mortgage were created in England it would be dealt with by the Scottish Courts in accordance with the English law. In Chapter X. certain information is given as to the devolution on death of a life policy in Scotland, and it would appear that an executor-nominate is the equivalent of the English executor, and an executor-dative the equivalent of the English administrator. Where an executor-nominate dies without dealing with a policy that formed part of the estate, his executor-nominate can act if the policy is included in the inventory, but his executor-dative cannot act and confirmation *ad non executa* should be taken out. The same course is necessary where the owner of a policy has left only an executor-dative, who has died without dealing with the policy, as neither his executor-nominate nor his executor-dative can act.

Married Women.—Formerly according to the Scots law a married woman's personal obligations were invalid and her husband by virtue of his *jus mariti* and right of administration was entitled generally speaking to the management and administration of his wife's property. Exceptions occurred (1) where a stranger gave or bequeathed property to the wife expressly exclusive of the husband's rights; (2) where by ante-nuptial contract the husband renounced his rights; and (3) where by post-nuptial settlement the husband made a suitable provision for his wife of an alimentary nature to take effect after his death. In cases (1) and (2) the wife could deal with the property as she pleased. By the Married Women's Policies of Assurance (Scotland) Act, 1880, the husband's *jus mariti* and right of administration were excluded in the case of life policies effected after the Act by a married woman on her own life or on the life of her husband, and expressed to be for her separate use. She could also whether before or after the Act, deal with any policy taken out by her after marriage, if the premiums had been paid out of property held by her, free from her husband's rights. The Married Women's Property (Scotland) Act, 1881, which came in force on 18th July, 1881, abrogated the *jus mariti* completely and excluded the right of administration from the annual income of the estate in the case of marriages contracted after the passing of the Act, if the husband was at the time of the marriage domiciled in Scotland. The wife still required her husband's consent to the disposal of her estate unless in the case of a policy effected for her separate use under the Married Women's Policies of Assurance (Scotland) Act, and in cases where by special arrangement the husband's right of administration was excluded. By the Married Women's Property (Scotland) Act, 1920, the husband's right of administration was absolutely abolished, and a married woman was given the same powers of disposal with regard to her estate as if she were unmarried, as well as power to execute deeds which should be as valid and effectual as if executed by her with the consent of her husband. Since 23rd December, 1920, therefore, the personal obligations of a married woman, who with her husband is domiciled in Scotland, are valid and she can deal with any life policies belonging to her without the consent of her husband.

Minors.—According to the law of Scotland, minors (*i.e.*, those between ages 12 and 21 in the case of females and between ages 14 and 21 in the case of males) are not entirely prohibited from managing their own affairs. Their deeds, alone or with the consent of their Curators, if any had been appointed, would be valid, but would be liable to be reduced (*i.e.*, set aside) within four years after the minor attained majority, if it could be proved that the transaction was entirely prejudicial to him. It would be possible, therefore, in certain special cases to allow a minor to deal with his life policy without much risk, but unless it was clear that he could not possibly be prejudiced by the transaction, the application should be refused.

Stamp Duties.

A list of the principal stamp duties with which we are concerned will be found in Appendix B. It is enacted by section 118 of the Stamp Act, 1891, that :—" No assignment of a policy of life insurance shall confer on the assignee therein named, his executors, administrators, or assigns, any right to sue for the moneys assured or secured thereby, or to give a valid discharge for the same, unless the assignment is duly stamped, and no payment shall be made to any person claiming under any such assignment unless the same is duly stamped."

This section applies to all documents whether executed before or after the Act, and penalties are imposed on any person making a payment in contravention of it. Section 117 provides that any undertaking for assuming liability on account of the absence or insufficiency of the stamp upon any instrument executed after the 16th May, 1888, shall be void. It is essential therefore that all documents forming the chain of title to the policy, should be examined to see that they are properly stamped. If any doubt exists, they should be returned for further stamping, or for adjudication. Where by an assignment and reassignment, whether by way of mortgage or absolutely, the policy has passed back to the original assignor, the Revenue Authorities take the view that the claim is not made under these deeds, which merely record a closed transaction, and they do not therefore claim that the assurance company should insist on such documents being correctly stamped. An absolute assignment of a life policy should be stamped as a conveyance on sale, but the *ad valorem* stamp on the amount of the consideration stated, is not necessarily sufficient. If it is markedly less than the surrender value of the policy, it may not be the true consideration, and enquiry should be made as to this, since the stamp should be charged on the true consideration. Under the Finance (1909-10) Act, 1910 (section 74), a conveyance in respect of which the consideration is held by the Commissioners of Inland Revenue to be inadequate, would operate as a voluntary assignment *inter vivos* and such an assignment is chargeable with the same duty as a conveyance on sale with the substitution of the value of the property conveyed for the amount of the consideration for the sale. In the case, therefore, of assignments executed after 29th April, 1910, the stamp should never be less than the *ad valorem* stamp in respect of the surrender value, even if the true consideration for the assignment should for some reason be less than that amount. Voluntary assignments prior to 29th April, 1910, would be correctly stamped with 10s. as conveyances not otherwise charged. Strictly, any conveyance after 29th April, 1910, operating as a voluntary disposition, is not considered duly stamped unless it bears the adjudication stamp, but if it is known to be correctly stamped it would not be usual to insist on this as the adjudication stamp could presumably be obtained at any time if necessary. The possibility that a payment under an unadjudicated deed might be considered a technical breach of the provisions of section 118 should, however, be considered. A conveyance on sale subject to a mortgage should be stamped not merely on the net consideration paid, but on the amount due under the mortgage as well. Where such an assignment is subject only to a mortgage to the company issuing the policy, it is not in practice charged with duty in respect of the mortgage. The adjudication stamp should be obtained, as the practice might be changed at some future time. Mortgages of life policies should be stamped in the same way as mortgages of any other property, and different duties are payable according as the document is a legal mortgage, an equitable mortgage, a transfer of mortgage, or a mortgage by way of collateral security. In the case of a collateral security the duty payable is limited to 10*s*. by the Revenue Act of 1903, section 7. The deed should bear the denoting stamp showing that the full mortgage duty has been paid on the principal mortgage, or the principal mortgage deed should be produced to show that it is duly stamped. The duty on the reconveyance of a collateral security is also limited to 10*s*. if the reconveyance of the principal security is duly stamped. An equitable mortgage, if under seal, or if framed so as to give a power of sale or other powers usually contained only in a legal mortgage, should be stamped with the full duty applicable to a legal mortgage. Mortgages for unlimited amounts by way of continuing security, which are of so frequent occurrence in connection with banking transactions, should be stamped up to the amount at least of the original advance and should be further stamped if and when further advances are made, exceeding the amount for which the mortgage is stamped. The company, however, need only satisfy itself that the mortgage was stamped correctly having regard to the original advance, as it is provided by section 88 (2) of the Stamp Act that where any advance is made in excess of the amount covered by the *ad valorem* duty formerly impressed, the security shall for the purpose of stamp duty be deemed to be a new and separate instrument bearing date on the day on which the advance is made. It follows, therefore, that if the document was correctly stamped for the amount of the original advance, and if the mortgagee has power to give a discharge for the policymoneys, his discharge can safely be accepted, even although the amount paid should exceed the amount for which the document is stamped, and even although to the knowledge of the company the amount owing under the mortgage at the date of payment is in excess of the amount for which it is stamped. Where the amount payable exceeds the amount for which the document is stamped, a letter should be obtained from the mortgagee certifying that the amount originally advanced did not exceed the amount in respect of which the document was stamped. In cases where the amount payable is less than the amount in respect of which the document is stamped, it is not now necessary to make any enquiries as the Inland Revenue Authorities have absolved the companies from any responsibility in such cases.

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CHAPTER XII.

MORTGAGES.

By James Robert Hart, F.I.A.

Introduction.—In the following remarks the subject of mortgages is treated from the life assurance company's point of view, though many of the questions discussed equally affect trustees and other private investors. Life assurance companies, it is well known, possess special facilities for lending money on mortgage. Their large funds enable them to deal with applications for practically any amount, while the nature of their liabilities permits of their investments remaining for long periods, and thus obviates one of the disadvantages to a mortgagor of borrowing from a private lender. Besides this, the companies can deal with securities of a special nature like reversions yielding no present income; and they have the machinery for safeguarding their mortgage investments that few private lenders possess. The result is that this class of security will always be favoured by life offices.

No attempt is made in this article to treat the subject from a legal point of view. On legal questions reference should, of course, be made to any of the works by well-known authorities. A prudent mortgagee will always consult his solicitor on legal questions, and what is done in the following pages is to discuss some of the practical considerations that come before those occupied with the investment of money on mortgage, and to deal in this connection with questions affecting the personal covenant, the analysis of various classes of security, the valuation, and incidents arising when the mortgage is on the books.

An important consideration that enters into the investment of money on mortgage, but one that is sometimes neglected, is the weight to be given to the personal element in the transaction. In this respect mortgages differ from stocks. The latter, when quoted in the official list, involve a publicity which is to a great extent a safeguard, and, speaking generally, the personal element in the way now referred to does not affect them. But a mortgage is a private transaction between the parties concerned, and the mortgagee depends on his own enquiries on many points that have an important bearing on the safety of his capital, as well as on the likelihood of the investment proving a desirable one. He is investing primarily for safety and not for profit, and every precaution that experience shows may affect the transaction must therefore be taken. In this connection he will, in the first instance, enquire as to the source from which the application comes. A good introduction not only is a guarantee as to the accuracy of the facts submitted, but also has an important bearing on conditions and circumstances, which though not contained in the proposal, the proposed mortgagee's enquiries are aimed at bringing out. The source from which the application comes may, for example, lead one to believe that the transaction has already been offered in other directions. As there is always a demand for good mortgages, it is probable that if the loan has already been refused, there are disadvantageous circumstances attaching to it which may not appear in the particulars supplied. Further enquiries would, no doubt, elicit information on these points, but a good deal of time and trouble is saved, if they are brought to light at an early stage of the proceedings. The majority of desirable mortgage securities are introduced through solicitors, and the advantage of dealing with a firm of good standing need not be insisted upon. One has, then, the satisfaction of knowing that one will be secure from many of the little points of doubt that would otherwise arise; moreover, in the case of securities involving technical skill and experience, such as reversions, a mortgagee can then have some confidence that a fairly accurate statement of the security has been supplied. Generally speaking, a mortgage application placed in the hands of a mortgage broker implies that the borrower has not been able to find a lender at once, and that there is, therefore, some unfavourable feature about the security which would render it undesirable for a life office. If an application has been what is known as "hawked about," it is seldom worth while commencing a troublesome and lengthy investigation.

Personal Covenant.—Having satisfied oneself as to the source from which the proposed investment comes, the next enquiry turns on the value of the personal covenant of the borrower. Some mortgagees ignore this feature of a mortgage security. They consider that if they are satisfied as to the property, they need not concern themselves with the borrower's position. Experience shows, however, that a satisfactory personal covenant is of importance and value to a mortgagee from various points of view. In the first place, he is saved a great deal of trouble if interest is punctually met by a conscientious and substantial borrower. An insurance company does not wish for temporary investments, but to have the mortgage on its books as long as the security is satisfactory. If there is default soon after the transaction has been taken up, and the security is thrown on its hands, it has spent time and trouble to no purpose. Experience shows, too, that the risk of eventually finding the property an undesirable security is to a great extent minimized if the borrower is a trustworthy man. In such a case he will not only have punctually carried out, as far as he was able, all the obligations he entered into, but will have properly looked after the security. To sum up, one may safely say that if a life office with a large number of mortgages on its books does not pay attention to what may be called its first line of defence in the shape of the personal covenant, its mortgage investments will very clearly show the effect of the neglect. Apart from the time and trouble involved in getting the interest and other covenants carried out, there will probably be losses which might have been avoided.

Though a large proportion of good mortgages are in the nature of business transactions to enable the borrower to make a better use of his money than if it remained locked up in the security, there are, of course, many cases where a person is induced to borrow on account of insufficient means to meet the expenses attendant on his mode of life. This is generally the case with regard to loans on life interests and reversions. In these the personal covenant is not of the same importance, the securities being such as a life office willingly takes over.

In making these preliminary enquiries one is often assisted in arriving at a decision by ascertaining the object of the loan. This enquiry may, for example, elicit the information—which had not been volunteered—that the loan is to pay off an existing mortgage held by another party. One would then, naturally, enquire as to the reason for such repayment. The money may have been called in, being required by the existing mortgagee owing to the division of an estate. But if the loan has been called in on account of that mortgagee's dissatisfaction, either with the security or the way in which the borrower has failed to meet his covenants, the proposed lender is at once put on his guard.

Assuming that he is satisfied as to the trustworthiness of the borrower, and his agent or solicitor, the mortgagee can then proceed to consider the particulars of the security submitted to him, with confidence that important facts will not have been wilfully withheld or misstatements made. It is probable, however, that the particulars supplied will not give all the information required by the lender. Beyond the short statement of the security with the terms proposed, the lender will require a number of additional facts to enable him to analyze the security and estimate what his position will be in the event of his having to take over the property.

Analysis of Security.—The points of view from which various classes of property should be analyzed depend, of course, to some extent on the general, social, financial, and industrial conditions of the country; and the principles on which prudent mortgagees act have had to be adjusted to meet the radical changes due to the war. In general, however, the following remarks are as applicable as they were before 1914, and where any important modification of principle has since had to be adopted, mention is made of it.

Agricultural Properties.—Let us suppose, for example, that the application is for a loan on mortgage of a large country estate, and that particulars of the situation, acreage, total gross rental, and outgoings have been supplied. In the first place, the lender will require to know how this rental is made up. The separate amounts from mansion house, farms, cottages and from miscellaneous items like shootings, timber, quarries, &c., will have to be furnished. If the mansion house is a large one in the occupation of the borrower, and is such as, with the gardens, would involve considerable expense to keep up, it is generally advisable to omit the estimated rent as an item of income, and sometimes even to make a deduction on account of the possible liability for up-keep. Timber sometimes forms one of the items making up the total value on which the mortgagee is asked to lend. There are a number of important considerations to be kept in view. The amount annually cut by the owner would have to be carefully watched, and a large margin in any capital value taken to guard against fluctuations. Shootings are generally left out of account. The rent derived from these is often subject to fluctuation and is seldom an item on which a mortgagee can safely rely. Income from such a source as quarries is also omitted. Sometimes part of the income from an estate is from coal mines. Generally speaking, income derived from such a source would be viewed with very great caution by life offices. If, after a full investigation of all the circumstances, it were taken into account, a large margin would be allowed. The life of the mines is, of course, the first consideration. Conclusive evidence might be forthcoming that even with greatly increased output they would last many years, and the risk of the coal coming to an end could therefore be put aside. But, even then, the lender would have to remember that the market for the sale of the mines would be a restricted one. He would, therefore, satisfy himself that they were leased to strong companies; for, in the event of the security being in his hands, the last thing he would wish would be to have to carry on the business of working the mines himself. Another consideration to be kept in view is the risk of strikes, which might seriously interfere with this source of income. It may be said that having regard to all these circumstances, life offices would refuse to lend on mines alone; though given favourable conditions, as mentioned above, the income from them is sometimes taken as supplementing that from the surface rents.

In his analysis of the rents from a country estate, the lender would make careful enquiries as to the tenancies, with the view of forming some idea as to whether the income was likely to be maintained, increased, or diminished. He would, with this end in view, ascertain the terms for which they had to run and whether any allowances or abatements had been granted to the tenants off the rents for which they were liable. He would, also, call for a statement of the rental for the last three years to see what changes had taken place. A similar enquiry would be made as to the outgoings. It is not sufficient to know the "repairs," for example, for one year only. The outgo on this account fluctuates considerably, and it is important to see whether there have been other outgoings in previous years which do not appear in the year first presented. In arriving at his estimate of margin of income the lender should bear in mind that if he should find it necessary to appoint a Receiver, he will probably have to pay not only the Receiver's commission, at 5 per-cent, but also a commission to an estate agent for actual management. It is advisable, therefore, to see whether the income allows a margin sufficient for these items, especially if no allowance for management has been made among the "outgoings." It is well, also, to bear in mind that the income from cottages may be subject to a heavy deduction on account of repairs. Large country houses, in the occupation of the borrower, and with no income-producing estate attached, are not very desirable securities for mortgage. In case of default there will be no income until a tenant is found for the property, and the mortgagee may not only have to wait a considerable time before he finds a purchaser, but during this period he will probably have to defray the cost of keeping the place up. After a careful analysis of the income and outgoings in the way above mentioned, the proposed mortgagee would allow for a possible fall in rents and for some vacant holdings, and then see what margin of income there would be to meet the interest on the loan, and if it is a case where it is desirable for the principal to be reduced annually, whether such margin would also provide the instalments.

Town Properties.—Mortgages on properties in London are very varied in character and security. Among the best for mortgage purposes are, perhaps, blocks of offices within the central area in the City. A constant demand for tenancies at rentals that tend to increase rather than diminish, facilitates letting, while there is generally no difficulty in selling such a property. The best securities are, of course, freeholds. But leaseholds are more common than freeholds; and, provided the ground rent is not too large and the term of the lease is sufficiently long, leaseholds in the City of London afford good security. The value of a lease, according to the tables, does not begin to diminish much until it is less than 50 years; but even shorter terms can be accepted, if satisfactory provision can be made for reduction of the loan each year or for a sinking fund policy. Where the number of years unexpired has been reduced to a very short period, it is necessary, of course, to bear in mind that the market for such a property will probably be restricted. For this reason life offices usually decline to lend on very short leaseholds. Then, again, if the ground rent is very large, a leasehold property is not altogether a desirable security. In City properties it generally bears a larger proportion to the rack rent than in other parts of London, and sometimes it has been fixed at such a figure as to render the property unmarketable, and the mortgagee, therefore, runs the risk of finding himself in possession of a property which, owing to one or two vacant tenancies or a diminution in rents, produces insufficient income to meet the heavy outgoings. Sometimes this high ground rent is due to the fact that the original lessee has underleased the property at a higher ground rent than he pays—the difference being known as an "improved ground rent." In such a case special caution should be exercised with regard to the amount lent. In considering a loan on a block of offices, attention must, of course, be paid to see that all the proper deductions have been made in arriving at the net rental, as in the case previously examined. Applications are often made for mortgages on buildings recently finished, where the rents, or a portion of them, are only estimated and not actually received. Such a property would not be considered a desirable security. Then, again, a considerable portion of the rental income may not actually be received, but may be the rent of the premises occupied by the borrower, or the rent paid by a limited company in which the borrower is the principal shareholder. In both cases the figure put forward as the rent would require careful consideration, and might be found to be in excess of the rent at which the premises so occupied could really be let.

Among the various classes of London properties which come before life insurance companies for mortgage purposes are dwelling houses in the West End and suburbs. Conditions have been changing rapidly since the war. Before the war, the market for dwelling houses was poor, owing to overbuilding. Since, there has been the well-known shortage, but there are now signs of slackened demand. All this points to the need for caution in lending on the basis of the price paid for the house by the borrower, to the necessity for an ample margin, and the desirability of the principal being reduced by instalments, either in cash or in the form of an endowment assurance policy.

In applications for loans on shops, one may have under consideration either the very large buildings in the occupation of the borrowers, where the possibility of difficulties of letting must be kept in view, or smaller shops in the suburbs. Values of the latter, based on new tenancies, are sometimes speculative. If the trade succeeds, the rent is obtained ; if not, the shops may remain empty a long time. Blocks of flats form very undesirable mortgage securities for a life office. In case a sale is necessary, it is difficult to find a purchaser, as the number of investors who take up such large properties (which must be dealt with as one investment) is limited, and a block of flats cannot be realized like separate houses. It is probable that, in the event of the mortgagee having to take over the security, he would have to hold it a long time and have all the trouble of management. Further disadvantages are that the outgoings being very heavy, a diminution in the rents will leave a very small margin, and that the tenancies are often of short duration.

Miscellaneous Properties.—Manufacturing properties such as factories are generally to be avoided. In certain areas, where the site is valuable, exception might be made ; but in most cases the mortgagee's power of sale or letting in case of default is limited with such a security, and it is, therefore, a very undesirable class of property on which to lend. One is often urged to do so on the ground that the firm occupying the premises is financially strong and prosperous, and that the probability of their failure is very small. If a lender recognizes that he is depending largely on this covenant for several years and can be satisfied that instalments will be paid, substantially reducing the principal within that period, a mortgage may, in exceptional circumstances, be arranged.

Properties let at weekly rents are sometimes offered to life offices as securities for loans. They may be either large blocks of industrial dwellings in the East End or on the south side of the Thames, or small houses in the suburbs. If close attention were paid to the management and considerable skill and experience employed, these properties used to show a good return to an investor. But from the point of view of a mortgagee, the trouble involved in management would be a serious drawback ; moreover, it would be difficult to find a purchaser for a large block of buildings, while districts of small houses may suffer from a migration of the labouring class. Sometimes cottage property occupied by the employees of some large factory or mine is offered. This would, of course, be a very undesirable security, depending to a great extent on the stability of the undertaking.

Mortgages on public houses are occasionally entertained by insurance companies. There is the risk of the loss of the licence ; but where the site is valuable, as in the centre of a large town, or the building would readily let for other purposes, the necessary margin is provided, apart from the trade element. Hotels are not, of course, subject to quite the same risk, but unless the building is adaptable for other purposes, there may be difficulties in disposing of the property in case of default.

Insurance companies are sometimes asked to assist in developing building estates. There are several important points to be borne in mind which generally deter a prudent investor from taking up this class of mortgage. In the first place, there is the objection that there will probably be no income, or at most a small one, compared with the interest requirements. Then, the building value is to a great extent a speculative element. Even if a number of houses have already been erected on the estate, there is a special risk in the fact that the borrower has acquired the estate to re-sell. If things go well, the mortgage will be repaid, while if it remains, it will be a pretty sure indication that the borrower has not been able to sell, and the mortgagee may find himself with property for which there are no buyers. The alternative would be to continue development of the estate. This process would involve a large expenditure of time, trouble, and money, generally quite outside the scope of a mortgagee's business. Another unfavourable feature to be kept in view is that the borrowers may have under-estimated the time necessary to get rid of the estate in plots, and the accumulation of the mortgagee's interest becomes a serious item.

Properties out of the United Kingdom.—Mortgages on property out of the United Kingdom appear in the balance sheets of British insurance companies, and therefore call for a few special remarks. Among other features in these investments may be mentioned the necessity on the part of the lender for a thorough knowledge of local conditions, and the provision for local management to deal effectually with them. It is usual for insurance companies to appoint a local board, composed of men of judgment and experience, whose recommendations the home board are prepared with confidence to accept. The value of this local board is apparent when it is remembered, first, that unless there is very careful selection, most of the desirable mortgages will be taken up by native lenders on the spot, and will not come before the foreign investor, and further, that the members of the board will possess a knowledge of the trustworthiness of the people with whom the company is dealing, which is essential Experience shows that in some countries this is even more important than in our own. Thoroughly qualified local representatives are also necessary to watch the mortgages after they have been put on the books, and to take steps to enforce the security if occasion should arise, as attempts to carry out these proceedings from a distance would, in most cases, obviously only be undertaken at a great disadvantage. Another point to be kept in view in connection with mortgages on property out of the United Kingdom is the market for the property in case of default. This may not only be much more restricted than in England, but be subject to fluctuations due to influences that are not met with here. Both these features point to the necessity for very careful consideration before accepting, without qualification, estimates of value adopted by local surveyors. Finally, the question of foreign law must always be kept in view. There are few countries where the position of a mortgagee carries with it such facilities for remedy against the property as in England. In most countries the lender, in case of default, has to invoke the aid of the Courts for sale or for using other remedies he can here adopt without such recourse.

Before the war a good deal of money was lent by British life offices on mortgage of buildings in Canada. There was a general rise in values all over the Dominion, and, especially in Winnipeg and the new cities out west, investments have turned out well; but prudent mortgagees did not on this account relax any measures of caution they would have considered necessary in view of the possibility of a serious reaction. They would have chosen a cautious valuer rather than one who took a very sanguine view of the future; they would not have lent more than 50 per cent. of value in Winnipeg and the western cities; and even with this margin they would have guarded against possible heavy depreciation by stipulating for reduction of the principal of the loan by periodical instalments. The result is that when the well-known effects of the war resulted in depreciation of values of properties, most insurance companies found themselves in a safe position. At the present time there is no demand for properties in Canada and not much money is being lent. Mortgages on farms in Canada carry a high rate of interest. They would not be favourably regarded by British offices on account of the instability of value due to climate and other risks, and possible difficulties in securing income. On the question of title, it may be mentioned that in the province of Ontario a mortgagee has the advantage of a Deed Registry with the facilities possessed by an English mortgagee. Further west, transactions are facilitated by the Torrens system of Registration of Title, while in Quebec the legal procedure follows French law.

It is a good many years since Australia was a field for mortgage investment in favour with British offices. Owing to the growth of their funds the native companies are probably now able to meet all the demands by borrowers on first-class securities, and these applications do not, therefore, come before British offices to the same extent. Apart from this, it may be mentioned that the experience of some of the latter was not particularly fortunate, and there seems no indication at present of a return to this field for mortgage investment.

In the days before the war when a good rate of interest was difficult to obtain here, some companies took up mortgages in Egypt. The transactions were restricted to very carefully selected securities in the towns, and experience was on the whole favourable. There have probably been few cases of default, so that there is not sufficient experience to say to what extent the market on attempted realization bore out the valuations. All the remarks already made as to local knowledge and thoroughly qualified local management apply with special force to this class of loan ; and, without going into details, it may be said that the legal system is rather a complicated one.

Loans on Life Interests.—A few special classes of mortgages to be found in the balance sheets of most life insurance companies must now be considered. In the case of life interests, the income mortgaged provides (1) interest on the loan during the life of the borrower, and (2) the premiums on a whole-life policy to return the principal at his death ; and the life insurance thus secured renders this class of loan particularly desirable for life offices. Owing to this attractive feature these loans are granted at a lower rate of interest than one would expect, having regard to the fact that they are unsuitable for most other investors. For the purpose of analysis, life interests may be divided into two classes : (1) where the income is derived from stocks, shares, or mortgages, and (2) where it is derived from the rents from land or buildings.

Dealing with (1), a proposed lender would first carefully consider how the present income from the fund is made up, and to what fluctuations such income is liable. If, for example, part of the income is derived from the dividends on ordinary stocks, allowance must be made for the fact that these dividends may vary considerably, while the interest or dividends on first-class debenture, guaranteed, or preference stocks would be taken as constant. Evidence must be called for that the mortgages in the trust fund are well secured, as they may have been taken up some years ago, and experience shows that it is a common practice for trustees to allow their mortgages to remain too long without such evidence. The trustees' powers of investment are generally enquired into with the view of seeing that these do not allow of investments of too risky a character.

In the case of many loans on life interests, the income is derived from rents from town or country properties. An analysis of the rental and outgoings would be made as in the case of a mortgage on the fee, with these considerations in mind (1) that the mortgagee is primarily concerned with the income ; and as regards capital value only to this extent, that if the estate or part of it were to be sold, the income would then be derived from the proceeds ; (2) that the mortgage on the life interest will rank after all the charges on the fee. There are often large deductions from the gross income before arriving at the margin available for the life interest, and it has always to be borne in mind that a diminution in the gross rental falls with much greater proportionate weight on this margin. In fixing the amount of policy to return the capital, it is usual to allow a margin equivalent to one year's interest and premium, and to make the policy a world-wide one to provide against the necessity of imposing a heavy extra.

Loans on Reversions.—Mortgages on reversions should carry a higher rate of interest than that generally charged by insurance companies, as these securities are avoided by trustees or most private lenders as being unsuitable for them for various reasons. There is no immediate income; they require special knowledge and skill, and there are a number of risks that require to be carefully guarded against. With life insurance companies, however, these objections have not the same weight. The fact that the security produces no income is quite immaterial, provided interest can be secured in reversion; moreover, the companies have the organization and skill available for dealing with these securities which, as compared with land or houses, have the advantage that they increase in value as the age of the life tenant increases, and assuming good margins have been taken on the fund, they are not liable to the same risk of depreciation as a mortgage on property. One of the risks to which a mortgagee of a reversion is subject is the possibility of the notice of his claim being overlooked by the trustees. It must be borne in mind that neither the trustees nor their solicitors have a system for registering notices as in a life office, and that a notice may be lost. A distringas placed on the stocks would bring to the notice of the mortgagee any dealing with the fund; but where the fund is invested in mortgages, such protection cannot be obtained, and for this reason a reversion to such a fund is undesirable as security for a mortgage. Apart from this, a fund consisting largely of mortgages is undesirable from the point of view that these will probably be left too long by the trustees without review and losses result. The risks just mentioned are, of course, obviated when the Public Trustee or an insurance company is the trustee.

The legal position of a person dealing with reversions has been established to a great extent by judicial decisions arising from dealings over a long course of years. In this connection it may be mentioned that applications are sometimes made for loans on reversions arising under foreign wills. According to the writer's experience, however, these reversions cannot be made into a satisfactory security for a life office. There have been no, or very few, legal decisions of the nature referred to, as in this country; and on the all-important question as to the priority of incumbrances the lender gets no protection.

The main points in the analysis of a reversion for mortgage purposes are the same as those for purchase, except that in the former case a more cautious valuation would be adopted. When purchasing, one can to some extent set the chance of a profit from a rise in the value of the stocks against the effect of a fall, but for mortgage purposes it is generally thought desirable to take an additional margin. Another consideration to be kept in view is that the security is really in other people's hands for management, and that the mortgagee is dependent to some extent on the personal qualities of the trustees of the fund. In this connection it is advisable to see that there are at least two trustees, as to whose trustworthiness the mortgagee has no doubt. Objection is generally taken by the latter to the borrower being one of the trustees, as if there should be a breach of trust, the borrower's share would be liable to make good to the other beneficiaries any loss on the fund; moreover, if the borrower should be left as the sole trustee, the realization of the fund would be left to him and the money pass through his hands. In practice, however, there are so many cases where the borrower is one of the trustees and cannot be asked to retire, that a mortgagee is obliged to accept the position and content himself with very careful enquiries and evidence as to the borrower's character. Reversionary life interests, where the reversioner is entitled after the death of the present life tenant to the income for life and not to the capital of the fund, do not form a satisfactory security for a loan on mortgage. To provide for the return of premiums and interest which may accumulate during the life of the present life tenant, a policy for so large an amount would be necessary as to make the terms prohibitive. If a policy for a small sum were accepted, the lender would be running the risk of losing part of his accumulated interest and premiums by the prolongation of the lifetime of the life tenant. The only sound method of dealing with these interests is to arrange for the sale of an annual reversionary sum in exchange for a cash payment.

A life office is sometimes asked to lend on an expectancy under the will of a living person. In most cases, of course, no proper security can be given for such a loan, for the testator may alter his will or get rid of his property in his lifetime. But occasionally cases are brought before an office where the testator has become a lunatic since making the will, and there is good evidence that there is no other will, and that the testator is unlikely to recover his reason. The objection then remaining to granting a loan on such an interest is the difficulty of securing priority. Notice cannot be given till the death of the testator, and even then it would be difficult to secure priority; and for this reason such interests do not form suitable securities for life assurance companies.

Loans on Stocks.—Insurance companies are not often asked to lend on mortgage of stocks or shares. Such loans being of a temporary nature are generally arranged through a bank. Sometimes, however, a more permanent mortgage with a fixed instead of a fluctuating rate of interest is desired and an insurance company would then be approached. They would, of course, only lend on first-class stocks and there would be a provision in the deed for further security or sale if the value of the stocks fell below a certain figure. It is generally advisable for the stocks to be transferred into the names of the company or their nominee; while, to avoid trouble, authority can be given for the dividends to be paid direct to the borrower until further notice. Stocks or debentures not quoted in the Stock Exchange official list are sometimes offered, but would not be accepted by a prudent mortgagee.

An insurance company is very seldom concerned with any but first mortgages, but sometimes the incidents of a second mortgage come under consideration, as the latter may have been included to supplement a security by way of additional margin. The chief point to be borne in mind is whether, in the event of circumstances requiring it, the company would be prepared to take up the first mortgage to protect its second mortgage, and the rate of interest which the former carries is a point for consideration as well as the amount involved. The first mortgagee can exercise his power of sale without consulting the second mortgagee, and to prevent him from doing this to the detriment of the latter, the only course is to pay him off. Another point to be considered is that any diminution in the gross income affects the second mortgagee much more seriously than the first.

The above remarks complete the review of the main points a lender should keep before him in analyzing a security. When his analysis is complete, he may be satisfied that the mortgage is suitable for him to take up ; but if the security is land or house property, the lender will further safeguard himself by requiring a report and valuation by a surveyor.

Surveyor's Report.—In view of the fact that the safety of the mortgage money so largely depends on this report, it is unnecessary to insist on the great importance attaching to the employment of the right surveyor for the purpose. In this choice mortgagees are guided by a number of considerations. The chief thing is to employ someone on whose judgment, knowledge, and experience one has complete reliance. Experience shows that, from the point of view of an insurance company, the regular employment of one man whose capabilities are known to them from personal knowledge has great advantages. If different surveyors for different classes of property and for different localities are employed, the company will often be depending on someone else's recommendation or on mere reputation. They will not know whether the valuer is accustomed to take a cautious view in his estimates or otherwise, and the reports furnished will very likely be unsatisfactory in other respects. It is surprising how few surveyors, unless properly instructed, report on the aspects of a security that are really of vital importance to a mortgagee. It is quite common for the surveyor merely to give a description of the property, the statement of the income and outgoings, and the amount of his valuation with a recommendation that a loan of so much can be safely made upon the property. This is, of course, not sufficient. A mortgagee requires sound opinion on a variety of points affecting the property, and it will be necessary, unless he is employing his own surveyor who will know his requirements, to put questions of the following nature :—

(1) Is the value you have given likely, in your opinion, to be subject to fluctuation? Is it likely to be maintained, diminished, or increased?

(2) Can the property be *readily* sold for the amount of your valuation? This question is all important for a mortgagee though it is frequently neglected by a surveyor, and it should bring to light the very important fact, from the mortgagee's point of view, as to whether he is lending on a property that will have a restricted market or possibly no market at all. Some surveyors, especially if they are architects, will put down as their value of the property what it will cost to erect. This is, of course, of little use to a mortgagee; and the surveyor should be made to give his opinion as to the *market* for the property in the event of sale. A large block of flats, for example, as already pointed out, would be difficult to realize. The valuation of a large school building, or a chapel, is only misleading to a mortgagee, if he is not at the same time advised whether he is likely to realize the figure if he sells the property.

(3) State any special features of the building or any other circumstances that are likely to affect the value in the future. This question follows on the last, and is intended to elicit information—sometimes omitted by surveyors—on a variety of unfavourable circumstances that may influence the value. For instance, a Board school close to a large private house, or difficulties of access to the property and similar features should be mentioned.

(4) Are the rents likely to be maintained, reduced, or increased? and would the property readily let? One of the chief considerations for a mortgagee, apart from sale, is as to whether he can readily let the property, should the existing tenancy or tenancies cease. Mortgagees have sometimes found, to their cost, that they have on their hands a property that showed a good income and ample margin for interest, according to the surveyor's report, but when they have to go into possession and re-let, they find themselves in difficulties. There may, for example, be faults of construction. When the staircases in a warehouse have not been provided according to the London County Council's requirements the mortgagee might find himself called upon to spend

£500 in putting matters right before he could let the property. Then, again, such a property as club premises would probably be difficult to let.

(5) State the forced-sale value. It is sometimes useful to put this question to valuers where the mortgagee has no knowledge as to whether the valuer takes cautious views or otherwise in arriving at his figures. A mortgage could, of course, very seldom be arranged if the loan were restricted to two-thirds of the forced-sale value. A surveyor usually gives what he considers the fair market value; and if his report is to be a satisfactory one, he will, in fixing such value, have considered whether the property is likely to realise it, and whether the two-thirds he recommends will be safe in any event. It used to be the general practice to lend two-thirds of the surveyor's valuation, but since the war the proportion is often less.

(6) What sum would you recommend trustees to lend on the property?

The report should be obtained on the instructions of the mortgagee and not on those of the mortgagor, and although the surveyor's fee has to be borne by the latter, the report should be regarded as for the mortgagee's private use. The borrower naturally expects the proposed lender to give, so far as possible, a definite decision as to whether the latter is satisfied on all points except valuation, before the expense of the report is incurred. If the lender afterwards declined the loan on grounds other than that of value, the borrower would naturally have some cause for complaint. It is always well, however, for the mortgagee to stipulate that his decision is subject not only to value, but also to the surveyor's report being favourable on all other points. Among minor points to be dealt with in the report is the amount for which the building should be insured against fire. The full description of the property as set out in the report should be passed on to the mortgagee's solicitors for the latter to see that the property to which title is shown corresponds with that description. In default of this, the mortgagee could not be sure that he was actually lending on what his surveyor had valued.

Title.—The title to the property is, of course, investigated by the lender's solicitor and the mortgage deed prepared by him. The legal costs are borne by the borrower, and before the investigation is begun, it is usual for the lender's solicitor to get an undertaking for payment of these costs; for if the loan is not carried out, the borrower may raise difficulties as to them. During the course of the investigation of title, a good many points are brought to the notice of the lender by his solicitor, that bear on the value of the security. It is important, for example, for the solicitor to go thoroughly into the terms of the tenancy leases and agreements, and see that these agree with what was stated when the loan was entertained and with what the surveyor has based his valuation upon.

Mortgagee's Precautions.—Where care has been exercised to lend to borrowers of substantial and assured position, the interest on the loan is met, and the transaction remains on the lender's books, giving very little trouble till it is eventually repaid. During its existence, the questions with which the mortgagee has to concern himself will probably come under the following items :—

(1) Evidence that payments of ground rents and fire premiums have been met, and that the property has been kept in proper repair will be called for.

(2) Any new tenancy leases or agreements which the borrower proposes to enter into will be carefully considered by the mortgagee. It is usual to provide in the mortgage deed that the borrower shall not have power to lease without the consent of the mortgagee, that any lease or agreement entered into shall be handed over, and that any premium received by the borrower on the grant of a lease shall be paid in reduction of the loan.

(3) Portions of the mortgaged property may be sold from time to time. The mortgagee will require to satisfy himself as to the price, and may have to decide whether the whole of the proceeds will be applied in reduction of the loan, or whether part can be allowed to be retained by the borrower. It will often be necessary, in such circumstances, for a mortgagee to stipulate for a report by his own surveyor that the remaining security is sufficient. Where mortgaged property is put up for sale by auction, the mortgagee must be satisfied that the reserves are sufficient from his point of view.

(4) After the expiry of a period, the length of which depends on the nature of the security, a mortgagee requires to review his position, and with this object he will call for particulars of lettings and outgoings up to date, and ascertain what margin of security there is, in the light of the general conditions then prevailing. If there is any doubt as to the security, the lender will require a fresh report by a surveyor, or he may be so dissatisfied with his investment as the result of altered conditions, that he decides to call for repayment.

The experience of most of the large life offices shows that one of the best precautions a mortgagee can take is to stipulate for the principal to be reduced by annual or half-yearly instalments, even when the security seems at the time to be amply sufficient. This provides a safeguard against unforeseen circumstances that may arise and seriously affect the security before the lender has time to provide against them. Where such a precaution was taken, even the Great War left mortgage securities with a protecting margin.

A Mortgagee's Remedies.—A mortgagee's remedies in case of default on the part of the borrower have now to be considered. He can, of course, sue the borrower on the strength of the latter's personal covenant which is included in most mortgage deeds. It is seldom, however, that such proceedings are taken, where the value of the mortgaged property is thought to be sufficient. In most cases the mortgagee relies on getting his money back through the property, and the investigation made when the loan was granted should have been made with the view that this eventuality might arise. As the result of conditions due to the war, the mortgagee's powers have been subject to qualifications by reason of two sets of statutes, viz., the Courts (Emergency Powers) Acts and Rent Restriction Acts. A reference to the first set of statutes will be found in Chapter XI. The Rent Restriction Acts, while allowing a mortgagee certain increases in the rate of interest, prevent him from calling in his loan or taking any steps to enforce his security if the property comes within certain limits in respect of rent. The latter Acts are in force till July, 1923.

Subject to the above limitations, the courses open to a mortgagee to recover his money are the following :—

(1) He can go into receipt of the income from the property. This is generally only a temporary measure. A mortgagee in possession has not only the trouble of managing the property, but he is accountable to the borrower or anyone who has a subsequent incumbrance on it. This liability sometimes gives rise to a good deal of trouble. When the time comes for rendering accounts, objections may be raised to certain steps taken by the mortgagee or payments he may have made. Where, however, the security is a life interest, and the fund is therefore in the hands of trustees, the mortgagee simply calls upon them to pay over the income to him instead of to the borrower, and the facility with which these arrangements can be made in case of default is one of the advantages of these securities.

(2) He can appoint a Receiver. The practical advantage of this course is that although the appointment is made by the mortgagee, the Receiver is deemed to be the agent of the mortgagor, and the former is freed from any responsibility for the Receiver's acts. On the other hand there is the disadvantage that the Receiver has to be remunerated by a percentage of the income, generally 5 per cent.

(3) He can sell. In many cases a mortgagee wishes to get rid of the property, if there has been default in interest, and he, therefore, proceeds to take advantage of his power to sell either by auction or by private contract. He can do so without consulting any subsequent mortgagee, although it is customary for a first mortgagee to intimate to the next incumbrancers his intention, and to give the latter the opportunity to pay him off. The proceeds of sale are applied, first, in meeting costs, then, towards interest and principal, and the balance is handed over by the first mortgagee to the mortgagor or the next incumbrancer. It is sometimes thought that a mortgagee can acquire an absolute interest in a property by buying it in at an auction; but this is not so. The sale must be a *bona fide* sale in the open market, and if there is no purchaser, the mortgagee remains with the property, subject to the mortgagor's equity of redemption. The offer of the property for sale provides one of the tests of the surveyor's valuation. If it is found that the property is unsaleable, and that this is due not to temporary conditions which could not have been foreseen by the valuer, but to inherent defects of the security, the report on which the lender relied cannot have been drawn up in the way every prudent mortgagee should require. It is not uncommon for valuers to protect themselves by recommending that the security should be revalued at the end of a specified period; and seeing that many private lenders overlook the necessity for review- their securities, such a recommendation is a very useful one. Where the sale is not by auction, but arranged privately, the mortgagee must take the precaution of getting expert opinion as to the value at the time, in order that he may be able to show that the price is a fair one, and that he is not throwing the security away.

(4) Foreclosure is the process by which the mortgagee acquires the absolute interest in the property. The arrangements are, of course, left to a solicitor. An action is commenced in the Courts to which all those interested in the equity of redemption must be made parties; and after a period, generally six months, the mortgagee becomes entitled to the property absolutely, unless some one of the parties mentioned has come forward in the meantime and paid him off. The mortgage transaction is at an end, and the mortgagee is left with the property on his hands. If the security be a reversion, a life office will, of course, be quite prepared to be the absolute owner; but, in the case of land or buildings, these proceedings are generally resorted to only if it is found

that a sale cannot be effected at once, and it is inadvisable to remain as mortgagee in possession. Sometimes the proceedings in foreclosure are troublesome and expensive, and they are, therefore, less often resorted to than the other remedies of a mortgagee.

The new Law of Property Act.—It is premature to say what will be the full effect upon mortgages of the new Law of Property Act, which at the time this is written has passed the Lords and Commons, but has not yet received the Royal assent, and which in any event will not come into force till 1925. The scheme of the Act as affecting mortgages, is to secure that the owner of the land shall remain the legal owner, although it is mortgaged. What is known as the legal estate is to be restricted to the fee simple and terms of years; and a mortgagee is to have full legal security in a term of 3,000 years. Subject to the mortgagee's right to an alternative arrangement, existing mortgages of the fee simple will, on the Act coming into force, automatically become mortgages by demise for the term mentioned; while all future mortgages will be carried out in the same way. On repayment of the loan, the term ceases and no reconveyance is necessary. A sale of the term operates to vest the fee simple in the purchaser. It seems doubtful whether the Act really simplifies mortgage transactions, although in its other sections, it has been acclaimed as the greatest radical improvement in the direction of simplifying the law of real property our age has seen. That the mortgage by demise of a term of 3,000 years may not meet the requirements of all cases is suggested by the fact that an alternative scheme is to be allowed, viz. a mortgage may be made by "a charge by deed expressed to be by way of legal mortgage", which is to carry the full protection a legal mortgage would confer.

NOTE.—A list of suggested reading in connection with investments of various classes appears at the end of Chapter XIII. Some references to mortgages will be found in such reading.

CHAPTER XIII.

THE INVESTMENTS OF BRITISH INSURANCE COMPANIES.

By P. C. Crump, O.B.E., F.I.A.

The Rate of Interest.

The subject of investments is one of the most interesting, as well as one of the most important, of all matters relating to the conduct of an insurance office. It is difficult to see how an insurance contract could be made unless the aggregation of premiums paid could be usefully employed and increased by the operation of interest for the benefit of the insured; certainly a very different scale of rates would have to be charged in all branches, but more particularly in the life department where the reserves held against the various policies are of such paramount importance. Even in the fire and accident sections, however, interest is a very important factor as will be seen from a study of some of the Profit and Loss accounts of the more important composite offices, where it not infrequently happens that the dividends payable to the shareholders or proprietors of the company are met entirely from the interest earned on the investments earmarked for such account. The enormous value of a satisfactory interest rate in the case of the Life account is fully illustrated by Mr. J. Chatham in a well-known paper contributed to the Transactions of the Faculty of Actuaries (Volume III). Mr. Chatham endeavoured, on the basis of certain assumptions, to analyse the surplus in order to show the extent to which the various sources of profit contribute to the bonus on endowment assurances, and thus ascertained what produces the increase.

The example taken was that of a man aged 30 years insuring for £100 for a period of 25 years; this age and term were used because they agreed approximately with the average obtained by an office doing a considerable proportion of endowment assurance business. For the same reason the premium used was £4 0s. 7*d.* per cent. The expenses were assumed to be $66\frac{2}{3}\%$ of the first premium and $6\frac{2}{3}\%$ of the subsequent ones, a basis which closely coincided with the actual conditions. The valuation rate of interest was 3 per cent. Now let us assume that the yield on the particular company's funds is 4 per cent. and by translating the cash amounts into their equivalent reversionary values, we have the following table.

	Reversionary Bonus arising in respect of each Year of the following Quinquennia.				
	1st.	2nd.	3rd.	4th.	5th.
	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.
Mortality ...	0 7 4	0 3 4	0 2 4	0 1 11	0 0 5
Interest... ...	0 3 0	0 9 0	0 14 9	1 0 3	1 5 7
Loading ...	0 3 0	1 0 0	0 17 8	0 15 7	0 13 8
	£0 13 4	£1 12 4	£1 14 9	£1 17 9	£1 19 8
Less Interim Bonus @ 27/6 per annum ...	...	0 0 11	0 1 0	0 1 2	0 1 3
	£0 13 4	£1 11 5	£1 13 9	£1 16 7	£1 18 5

These results clearly demonstrate the importance of obtaining a high interest rate on the investments, the amount of bonus accruing from this source being no less than £18 2*s.* 11*d.* (*i.e.*, £3 12*s.* 7*d.*×5), as compared with only £3 16*s.* 8*d.* from mortality. It may be noted that had we taken the actual yield as 3¾ per cent. instead of 4 per cent., the surplus from interest would have been reduced by as much as £4 16*s.* 8d. to £13 6*s.* 3*d.* Again, dealing with the last quinquennium only, the excess interest, due to the extra ¼ per cent. earned, has the effect of increasing the bonus earned for that period by nearly 25 per cent.

I think I have said enough to indicate the extreme importance of the interest yield, but there is another factor in this connection to which attention must be paid, viz., depreciation in the market values of securities. As is well known, the prices of Stock Exchange investments attained their highest point in the year 1896, and from that time down to December, 1920, there was, with a few slight intermittent breaks, a continuous decline in values. So drastic was this fall that investors came to look upon the rate of interest obtainable in an entirely different light and to expect a return from high class securities equal to that which previously could only have been obtained from quite speculative sources.

The fall in prices has had a two-fold effect :—

(1) It has resulted in such an enormous amount of depreciation that the ledger values have had to be written down to approximate to the market values, and the large sums required for this purpose have been obtained mainly from the interest income, and therefore at the expense of the with-profit policy holders whose bonuses have been curtailed in consequence.

(2) It has enabled the companies to obtain a constantly improving yield on their new investments, and this

has been of the greatest possible advantage to those offices which have been writing large amounts of new business and therefore having to deal with rapidly increasing funds.

It will thus be seen that the depreciation of the last twenty years or so has not been altogether adverse. Indeed, if the improvement in values which set in during the earlier part of 1921 is maintained, and possibly still further augmented, it may prove to be in the long run a positive benefit for existing and prospective policyholders.

Before leaving this theme it may be useful to note the variations which have taken place in interest yields during the last 30 years. Thus to take an example of gilt-edged stock unaffected by any possible redemption date, London and North Western Railway 3 per cent. Debenture Stock yielded at its average price :—

£ s. d.		£ s. d.	
3 0 3%	in 1891.	3 11 3%	in 1911.
2 10 0%	in 1896.	4 10 6%	in 1916.
2 18 1%	in 1901.	5 13 0%	in 1921.
3 2 8%	in 1906.	4 13 6%	in May, 1922.

Again, taking a list of representative securities, one from each of the following groups :—British Government, British Municipal, Colonial Government, Colonial Municipal, Foreign Government, Home Railway Debenture, Guaranteed and Preference Stocks, and making allowance for redemption where necessary, we have :

£ s. d.		£ s. d.	
3 6 9%	in 1891.	3 13 1%	in 1911.
2 17 3%	in 1896.	4 15 9%	in 1916.
3 3 0%	in 1901.	6 3 5%	in 1921.
3 7 10%	in 1906.	4 18 0%	in May, 1922.

A very instructive table setting out the rates of interest per cent. (less tax) earned by 56 British offices from 1891 to 1906 is given on page 320 of Vol. xlii. of the *Journal* of the Institute of Actuaries. The author, Mr. P. L. Newman, divides the companies into eight classes, according to the rate earned, namely :—

Under £3 10*s*. 0*d*. ; £3 10*s*. 0*d*. to £3 12*s*. 6*d*. ; and so on by increases of 2*s*. 6*d*. per cent., his final group being £4 5*s*. 0*d*. per cent. and over.

In this way he shows that, whereas in 1891 thirteen offices were earning over 4¼ per cent. on their funds, from 1896 to 1902 not one was earning such a rate, while in 1906 there were but three. Similarly, of fourteen offices earning between 4⅛ and 4¼ per cent. in 1891, but two maintained so high a rate in 1900, none in 1901 and 1902, and only one in 1906. In 1891 the normal rate earned by offices was generally speaking, about £4 2*s*. 0*d*. per cent. ; in 1896 about £3 17*s*. 6*d*. per cent. ; in 1901 £3 15*s*. 0*d*.

per cent.; in 1902 approximately the same, while in 1906 it had risen to about £3 17*s.* 0*d.* per cent., thus showing that though the old yields had not been regained, yet a substantial recovery was taking place.

In order to see what has been the tendency in more modern times, I have investigated the net yield of 10 representative companies in 1911 and 1921. In the former year it is to be remembered that the rate of income tax was 1*s.* 2*d.* in the £, whilst, in the latter, it was 6*s.* in the £. The average yield shown is £3 18*s.* 9*d.* per cent. for 1911 and £4 6*s.* 6*d.* per cent. for the year 1921.

In considering these figures, however, attention must be paid to the manner in which they are obtained. The yield on the funds is usually obtained by means of Sir George Hardy's well-known formula $\frac{2I}{A+B-I}$ where

I represents the interest revenue,
A = the amount of funds at the beginning of the financial year, and
B = the amount of funds at the end of the financial year.

In other words, half the amount of interest received during the year is deducted from the mean amount of the funds, and the proportion which the interest income bears to this figure represents, for all practical purposes, the effective rate yielded.

The student, however, must be careful to distinguish between these published yields on the funds and the actual rate earned on the cost price of the investments. The latter figure would probably be materially lower in every individual case, owing to the former being reckoned on the actual assurance funds, or net liability, no account being taken of the reserve funds (which are assumed not to bear interest), amounts previously written off for depreciation, and so on.

The published yields are from this point of view somewhat flattering, and, whilst giving a true indication of the margin over and above the valuation rate adopted, do not represent the rate at which an office has invested its money. In considering the rate of mortality there is every reason to believe that the "expectation of life," *i.e.*, the average after life-time, has not altered very greatly, although, owing to the great strides made by medical science, better sanitation, and so on, there has undoubtedly been an improvement. By making careful observations from time to time, we are at any rate in a position to see in what direction and at what particular ages there is a tendency to change. It will be at once admitted, however, that there is no such guide in helping us to forecast the future rate of interest. Attempts to do so have been made occasionally in the past by certain bold adventurers, but generally with disastrous results. The immediate fruits of the Great War are now known, but we are still unenlightened as to the ultimate effects.

The Canons of Investment.

In discussing the principles on which the funds of Life Assurance Societies should be invested, Mr. A. H. Bailey, in 1862, laid down the following five rules for observance :—

(1) That the first consideration should invariably be the security of the capital.

(2) That the highest practicable rate of interest be obtained, but that this principle should always be subordinate to the previous one—the security of the capital.

(3) That a small proportion of the total funds (the amount varying according to the circumstances of each individual case) should be held in readily convertible securities for the payment of current claims, and for such loan transactions as may be considered desirable.

(4) That the remaining, and much larger, proportion may safely be invested in securities that are not readily convertible, and that it is desirable, according to the second principle, that it should be so invested, because such securities, being unsuited for private individuals and trustees, command a higher rate of interest in consequence.

(5) That as far as practicable, the capital should be employed to aid the life assurance business.

The principles involved in these five canons have met with general acceptance ever since they were enunciated 50 years ago.

It is evident, however, that the changes which have taken place in the field of investment open to directors of offices, the rapidly increasing amount of insurance funds demanding an outlet, and the keenness of competition, have affected the manner in which these principles can be acted upon. As regards (1) it has been pointed out by more than one authority that, strictly speaking, there is no such thing as the absolutely safe investment, and it is only necessary to refer to what was formerly our premier security, viz., Consols (which in 1896 were quoted as high as $113\frac{7}{8}$, in 1911 at $76\frac{3}{8}$, and in 1921 as low as $44\frac{5}{8}$) to show how impossible it is to ensure the security of capital. No. (3) and (4) have lost much of their reality since Mr. Bailey wrote his paper, as owing to the continued growth in the funds, the development of credit, and the periodical repayment of appreciable portions of the invested capital, the desirability of holding a certain amount of so called liquid securities is not really important. As a matter of fact, the business of the stock markets is now so much wider and freer than it used to be, that for practical purposes most Stock Exchange securities, whether permanent, long term, or short term, are comparatively easy to realise in substantial quantities, at least in ordinary circumstances.

Sir George May, in a paper read before the Institute of Actuaries in January, 1912, suggested the addition of another canon, viz., "That in order to minimise the result of temporary fluctuations and to best secure the safety of capital, it is desirable to spread these investments over as large an area as possible." This proposition also met with general acceptance at the time, but in view of the devastating effects of the war on the credit and currencies of so many countries, it is probable that a good many of its supporters have since thought fit to modify their opinion somewhat. There is, nevertheless, much to be said for such a course of action, but considerable care and foresight must be exercised before venturing into fresh fields of investment.

Review of the Changes which have taken place in the Investments of Insurance Companies during the past 30 Years.

By way of illustration of the changes which have taken place in the proportion invested in the various groups of securities, I submit some comparisons based upon the returns issued by the Board of Trade, and published in 1892* and 1912* respectively. The summaries of totals in schedule form have been discontinued since the war, so that in order to obtain the latest possible result, I have investigated the returns in the 1921 balance sheets of twelve of the leading offices.

	Percentage of Total in 1891 Returns.	Percentage of Total in 1912 Returns.	Percentage of Total in 1921. (12 offices).
Mortgages	39·3	21·8	9·6
Loans on Policies	4·4	5·3	2·6
Loans on Rates	10·7	6·8	4·1
British Govt. Securities ...	3·0	1·5	35·2
Indian and Colonial Govt. Securities	6·1	4·2	5·2
Foreign Govt. Securities ...	1·7	4·1	5·8
Debentures	11·0	23·2	11·5
Stocks and Shares	6·5	9·8	6·3
Land and House Property and Ground Rents ...	7·5	9·5	6·4
Life Interests and Reversions	1·6	2·2	·6
Loans on Personal Security	·6	·6	·1
Miscellaneous	7·6	5·0	6·5
Indian and Colonial Mun. Securities	...	3·8	2·0
Foreign Municipal Securities	...	2·2	1·8
Municipal and County, U.K.	...	...	1·5
Indian and Colonial Prov. Securities	...	...	·5
Foreign Provincial Securities	...	...	·3

* The figures relate for the most part to the years 1890 and 1910.

It will be observed that the percentage of mortgages has decreased to an enormous extent. Despite the fact that in the period under review the total amount of assets has been more than trebled, the figures in this particular section have actually been reduced, and from being by far and away the largest group in 1890, and second only to debentures in 1910, mortgages now come third in order.

Various reasons may be assigned for this decline but I think the main causes are (1) the increase in the field of investment open to insurance companies, (2) the fact that large sums of money which were originally borrowed on mortgage in the usual way are now obtained by the issue of mortgage debentures and are consequently included amongst Stock Exchange securities, (3) the relatively low rate of interest yielded by mortgages, and (4) the option exercisable by the borrower to repay or apply for reduction in interest, when rates are falling.

Loans on policies, after showing a slight increase, have fallen proportionately during the last 10 years. This feature may be attributed to some extent to the effect of war on wages and salaries, and also to the higher rates recently charged for accommodation.

The percentage lent on the security of public rates has fallen to a marked extent; this is partly due to the comparatively low yield generally obtained, and partly to a pronounced tendency latterly on the part of local authorities to place their loans with the public in the form of bonds and stocks. This is borne out by the section "Municipal Securities—United Kingdom," which I have included in respect of the year 1921 and which has a percentage of 1·5 of the total, and represents about £5,500,000 in all (for the twelve companies).

British Government Securities present a remarkable contrast. From 1890 to 1910 the amount remained nearly constant, whilst the proportion decreased by 50 per cent. Of course, during this period there was little else but Consols available, and these gave too small a yield to be profitable. This position has been radically changed by the war, which necessitated the raising of huge sums by means of War Stock, National War Bonds, Funding Loan, Treasury Bonds, etc., all giving a comparatively high rate of interest. Further, it became a patriotic obligation, and even a necessity, to put nearly all surplus funds at the disposal of the Government, and it was suggested by one Chancellor of the Exchequer that 20 per cent. of the total assets was a suitable proportion for all companies to hold. This figure has been largely exceeded, and several offices now have over 40 per cent. of their funds in British Government Securities. Necessarily, the high figure of 35·2 per cent. recorded in the table has had a very considerable effect on all the other items.

Indian and Colonial Government Securities have almost regained their 1890 position. The fall shown in 1910 can be traced partly to the competition of trustees through the powers given by the Trustee Act of 1893 and the Colonial Stock Act of 1900. During the last few years, however, there have been so many new issues at exceptional prices, that it is easy to account for the subsequent advance.

Foreign Government Securities, as was only to be expected, show a decided increase, the percentage having more than trebled during the 30-year period. The Russo-Japanese War, the growing expenditure on armies and navies, Government railways, etc. by the nations of the world, and the greater stability of the more important of the South American States undoubtedly contributed to the advance recorded in 1910. Since then we have had a number of loans for war purposes and repairing the damages caused thereby; substantial amounts of British insurance funds have almost certainly been lent to France, for example, and also to certain of the neutral countries. The high yields obtainable have contributed to the popularity of this group, which is the only one to show a continuous advance throughout the period under review.

Debentures represent a somewhat cosmopolitan group and consist of prior charge stocks and bonds of almost every section of marketable securities. Among those included are Home, Foreign and Colonial Railway Debentures, American Railway Gold and Sterling Bonds, Commercial and Industrial Companies' Debentures, and all forms of Public Utility Bonds. It is, of course, due to the large variety of investments (having little or nothing in common with each other, but brought together under this one head) that its progress was formerly so marked.

It is the custom of a large number of trading companies, which are in want of money, to raise capital by means of an issue of debentures secured on the freehold or leasehold property owned instead of by way of an ordinary mortgage, as was formerly the case. The result is that there are a very large number of industrial marketable debentures to be had, as compared with comparatively few, say 25 or 30 years ago, and loans which would have helped to swell the mortgage figures have undoubtedly been diverted into securities coming under the present section. The decreased percentage in the last decade is exceptional, and is due to a great extent to the mobilisation by the Government of American Dollar Securities, 1916-1918, when most companies realised their holdings of United States of America gold bonds.

Stocks and shares, after rising from 6·5 per cent. to 9·8 per cent., have since dropped to 6·3 per cent. This group includes Guaranteed and Preference Stocks and does not relate merely to ordinary capital. No doubt there have been appreciable purchases of the former class, but there has probably been a diminution in the latter, owing to sales of Home Railway Ordinary Stocks and the writing down of the Ledger Values of the remainder.

The amount invested in Land and House Property and Ground Rents, after a large increase to 1910, has since been reduced to below the 1890 proportion. This is not surprising in view of the repeated threats of adverse legislation, the natural limit to the properties available, and the non-commercial rates at which ground rents are frequently purchased by interested parties.

Life Interests and Reversions exhibit a material reduction, only about one-half of one per cent. of the aggregate funds being so invested. But few offices seriously compete for this class of business; as is well known several societies have been formed to deal solely with these securities, and consequently not many come on the market. For some time past, too, the opinion has been prevalent that reversions do not constitute a very remunerative investment, but experience has differed to a considerable extent on this question. It is to be observed that, in the Board of Trade summaries, there is no special heading for Loans on Life Interests and Reversions, which were presumably included under Mortgages. The percentage of such loans in the figures which I have obtained in respect of the year 1921 is 1·4, and if this is added to the percentage of actual purchases we get a combined proportion of 2 per cent., with a corresponding reduction in Mortgages to 8·2 per cent.

Loans on Personal Security form an altogether insignificant item, the indication being that the total sum so invested is less now than it was 30 years ago.

The Miscellaneous section comprises agents' balances, cash at Bank, etc., and the increase recently shown is probably due to the greater percentage of liquid cash held in recent years by most companies, owing to the persistent depreciation which had been going on in the market values of Securities.

As regards the next two groups, it will be noticed that no figures are given prior to 1910, and, for the last three groups, none for either 1890 or 1910. It is perhaps a little surprising to find such a large reduction in the percentage of Indian and Colonial Municipal Securities, as there has been hardly any case of default of principal or interest. Possibly there has been a tendency towards greater internal borrowing.

Of course, if we go back to still earlier times, the discrepancies in the figures of the various groups of securities would be much more startling, owing to the extremely restricted field to which insurance companies were then compelled to keep. For example, taking the balance sheets of four companies as they appeared in 1856 or 1857, and summarising the figures, it was found that :—

66·7% of the total funds was invested in					Mortgages.
16·3%	,,	,,	,,	,,	British Government Securities.
7·8%	,,	,,	,,	,,	Railway and other Debentures.
2·7%	,,	,,	,,	,,	Loans on Policies.
1·5%	,,	,,	,,	,,	Temporary Investments
1·4%	,,	,,	,,	,,	Bank of England Stock.
·8%	,,	,,	,,	,,	Reversionary Interests.
·7%	,,	,,	,,	,,	City of London Bonds.
2·1%	,,	,,	,,	,,	Unproductive Assets.

The Advantages which an Insurance Company possesses for making Good Investments.

Insurance companies are in an exceptionally favourable position for investing money in the most remunerative way.

In the first place, in almost every case the funds are increasing at a comparatively uniform rate, so that advantage can always be taken, to a certain extent, of opportunities of applying for attractive new issues or purchasing any stocks or bonds that may come on the market, even though the purchase-money may not be immediately available. It is very often sound finance for an insurance company to overdraw its account at the bank for the purpose of making a new purchase, especially when money is cheap.

In the second place, owing to the large amounts constantly requiring investment, there is considerable competition for a company's business, with the result that the very pick of the market can be obtained. In this connection I should like to point out that, in addition to there being a right and a wrong time to buy, there is also the question of the right and the wrong people to whom one may go to obtain suitable investments. Some dealers specialise in the foreign market, others in American railroad bonds, and so on ; and it will be found that the difference in price at which the same security is offered from different sources is at times quite appreciable. A very good example of this is to be found in connection with Canadian bonds and stocks having a market both here and in either New York or Montreal. Experience shows that it is almost invariably more favourable to the investor to negotiate his bargain on "Canadian terms," *i.e.*, to make the purchase direct from Canada, and arrange for the shipment of the securities to this country. The advantage gained is not merely a question of the cost of the British stamp duty (where this point arises) but is to be traced also to the absence of middlemen and to a better knowledge of existing market conditions.

Again, opportunities frequently occur of underwriting new issues for a commission, and consequently of getting in on "bed rock" terms. Naturally, a certain amount of caution is desirable in this connection, and a very good rule is only to entertain an offer of underwriting in such a security, and for such an amount, as the company would be prepared to hold as an investment in any circumstances. For the benefit of those readers who are unfamiliar with this subject, I may state that underwriting commission is a percentage paid to those persons who agree to take up a certain amount of bonds or stock in the event of the full amount offered to the public not being subscribed. To take a simple case, if only 40 per cent. of a loan is applied for in the usual way, the underwriters will (on the assumption that the whole of the amount is underwritten) be called upon to the extent of the remaining 60 per cent. in proportion to the amounts agreed upon; thus if £50,000 has been underwritten, the amount of stock to be taken up will be £30,000. Such a procedure by the issuing house is generally necessary to ensure the success of the issue.

Some investments which may be entirely unsuitable for private individuals are very often eminently suitable for insurance companies; for example, loans granted to municipalities on the security of the rates and repayable by means of yearly or half-yearly instalments of principal and interest, Indian railway annuities, reversionary interests, unquoted bonds of foreign and colonial origin, and so on. Securities with a limited market (or no market at all) invariably yield a proportionately higher rate of interest on this account, and a large investor with constantly increasing funds can afford to wait for the return of the principal until the maturity date arrives, when the amount due is paid off.

As an example of this, I may mention the case of a relatively small block of bonds issued by a British or Colonial municipality, the latter possibly having a Government guarantee. Such an issue may be parcelled out, perhaps, to one or more large investors at a price which is very remunerative both to the borrower (who saves many preliminary expenses) and to the lender (who is put into the position of subscribing for a substantial amount on special terms). Again, it is not an uncommon thing for three or four companies to co-operate for the purpose of advancing money on mortgage, where the sum required is too large for one company to undertake the transaction by itself; valuable insurances can frequently be obtained in connection therewith.

Most offices are in a special position to examine and investigate the nature and prospects of a security either by means of the machinery of their own investment departments or with the aid of outside expert advice. The initial cost of such a procedure is insignificant compared with the advantages to be gained thereby.

Lastly, most companies give their directors practically unlimited powers of investment, and I think, with good reason; it is the duty of those in authority to act with the utmost care and discretion in any case; but, on the other hand, the most carefully-worded regulations in existence could not prevent the making of unwise purchases. As an example of the undesirable results which possible limitations might bring about, it is only necessary to consider the hypothetical case of a company formed twenty years ago, whose Articles of Association limited its investments to trustee securities.

Incidentally, if the best results are to be achieved, a good deal of discretion must be left to the management and to the secretary, as otherwise quite a number of attractive propositions would be missed. For example, many loans are underwritten on the day prior to issue, and, if the matter is postponed for discussion till the next board meeting, the opportunity for acceptance will have passed. Offers of underwriting are frequently received subject to almost immediate reply.

Assurance Companies Act, 1909.

A thorough knowledge of this Act is, of course, essential to all insurance men, and Sections 30-34 deal with its application to special classes of business. With regard to the subject we are now considering, however, particular attention must be given to the Schedules as set out at the end of the Act.

The first Schedule consists of a form of revenue account, varied accordingly to provide for its application to life, fire, accident, employers' liability and bond investment business. The Second Schedule is a specimen of a profit and loss account. The Third Schedule is a type of balance sheet.

It is not necessary to make any detailed reference to the revenue and profit and loss accounts here, but the balance sheet is most important. Attached to this are four Notes, the third of which is as follows:—The balance sheet must state how the values of the Stock Exchange securities are arrived at, and a certificate must be appended, signed by the same persons as sign the balance sheet, to the effect that, in their belief, the assets set forth in the balance sheet are in the aggregate fully of the value stated therein, less any investment reserve fund taken into account. In the case of a company transacting life assurance business or bond investment business, this certificate is to be given on the occasions only when a statement respecting valuation under the Fourth Schedule is made." It is to be noticed that the word assets is used, which includes, of course, reversions, house property, ground rents, and so on, and does not refer merely to Stock Exchange securities, which have a definite and ascertainable market value. No doubt, opinions may differ as to the manner of arriving at the true value of some of these miscellaneous groups, but it is quite evident that they cannot be ignored in view of the depreciation which occurred prior to the war in all forms of property. The requirements very rightly refer to the state of securities in the aggregate, and any reserve fund held may also be taken into account. The effect of these two conditions is to render unnecessary constant alterations in the books as the market quotations vary from time to time. Lastly, this certificate need only be given on occasions when a statement respecting valuation under the Fourth Schedule is made; this is in accordance with Section 5, which states that every assurance company shall, once in every five years, or at such shorter intervals as may be prescribed by the instrument constituting the company, or by its regulations or bye-laws, cause an investigation to be made into its financial condition, including a valuation of its liabilities, by an actuary, and shall cause an abstract of the report of such actuary to be made in the necessary form. It will be seen that an office which makes an annual valuation is required to give this certificate as at the end of each financial year, whereas an office making a quinquennial valuation need only do so once in five years. A much greater strain, therefore, may be thrown upon the former class of office in order to preserve its solvency in accordance with the conditions of the Act, but, on the other hand, the with-profit policyholder is naturally kept in much closer touch with the actual financial position of the company in which he is insured.

Groups of Assets as set out in the Form of Balance Sheet Prescribed by the Assurance Companies Act, 1909.

The first item is *Mortgages*, which as already indicated, have declined somewhat in popularity. When there is reason to anticipate a fall in the market prices of Stock Exchange securities, it is good business to advance as large sums as possible on mortgage, so that on a favourable opportunity occurring, either the amount on loan can be called in and reinvested in marketable securities at a lower level, or notice can be given to the borrower that the rate of interest is to be raised.

As a rule, higher yields can be obtained on mortgages without the United Kingdom, and during the last decade some offices have invested largely in this direction, more particularly with regard to Canada. In that country there is generally a great demand for capital, and this is frequently obtained by means of mortgages. A considerable amount of caution is required in investigating the security offered for the loan, and it is advisable to have experts on the spot to make an independent valuation, if this class of business is to be carried on successfully.

Loans on Parochial and other Public Rates are but seldom suited to private lenders, and there is, therefore, not a great deal of competition for them. The security is, in most cases, ample, and repayment is almost invariably made by means of yearly or half-yearly instalments of principal and interest combined. At the time a loan is accepted a schedule should be supplied with two columns — the first showing the interest included in each successive payment, and the second, the principal. The summation of the second column will, of course, be equal to the original amount advanced, and the figures in the first column indicate the amount on which income tax is assessable.

Life Interests and Reversions comprise four separate sections, namely (1) loans on life interests, (2) loans on reversions, (3) life interests purchased and (4) reversions purchased.

One of the great difficulties attaching to reversionary interests as investments is the fact that the trustees are seldom parties to the contract. Although they are bound to give information as to the investments of the trust fund, they are under no obligation to disclose the existence of any prior encumbrances, and not only so, but are able to deal with the property according to the terms of the trust without reference to the assignee of the equitable interest. One objection is, therefore, the possibility of the trustees being either fraudulent, or incapable of managing the funds and of making reinvestments when such are necessary. Further, the title must be most carefully investigated, and every precaution taken to ascertain the possible existence of prior charges. There is no doubt, however, that reversionary interests can be, and are, purchased to give very satisfactory returns, but here the law of average plays a very important part, and the investments should be made on a large and systematic scale. Most important, too, is the value of the securities constituting the trust, not only at the time of purchase, but also at the probable future date when the funds come into possession. The classes of reversions calculated to give the highest yield will be found to be those dependent on young lives, or two or more lives, or involving one or more contingencies, but, strangely enough, these are frequently the kind which some offices habitually decline.

With regard to loans on reversions, there is the possibility of the amount advanced together with the accumulated interest eventually exceeding the value of the reversion. This is due either to the life tenant living for a term considerably beyond his "expectation" or to depreciation in the assets of the trust. The amount to be advanced must, therefore, be severely restricted where there is no guarantee that the interest will be promptly paid as it becomes due.

For the benefit of those who are not familiar with the subject, it may be as well to state that, when a life interest is purchased, it is customary to set up a policy in the books, the premiums on which are paid out of the income of the life interest; and thus, when the death of the life tenant occurs, the office recovers its initial outlay by means of the sum assured. When a loan is advanced on the security of a life interest, the necessity for taking these premiums into account, when deciding on the amount of the loan, frequently leads the life tenant to the conclusion that the office is dealing harshly with him. This feature is particularly noticeable in the case of reversionary life interests, where the sum to be assured is greatly in excess of the amount advanced, owing to the fact that allowance has to be made for the premiums and interest accumulating until the borrower comes into possession. Another point in regard to loans on life interests (and this affects reversions also) is the danger of the life tenant going abroad and the trustees losing touch with him; in such circumstances, they may refuse to hand over the money as it becomes due. It has been suggested that, unless the life tenant is a well-known public person, a better plan is to purchase the whole of the life interest outright, a portion of the consideration being in the form of an annuity on the vendor's life. This annuity would, of course, be granted by the purchasing office, which would thus be enabled to keep in touch with the life tenant.

It may be mentioned that there is no published experience of any size dealing with the rates of mortality of life tenants, and for a long time the Carlisle Table was almost invariably used in valuations, although latterly some actuaries have no doubt used the British Offices Annuitants experience. In March, 1922, however, the results of an investigation into the mortality experienced by life tenants under reversions, were given to the Institute of Actuaries by Mr. E. H. Lever, F.I.A., and the conclusions formed by this gentleman may be usefully submitted.

1. The mortality of female life tenants has been in general extremely light, whereas that of males has been comparatively heavy, especially at ages above 80. This means, in effect, that purchasers have been giving too high a price for reversions dependent on female lives, but have been compensated in part by a very slight gain in respect of male lives. Speaking broadly, the loss in respect of females has been equivalent to an average depreciation per reversion of about 5 per cent. in the fund, and the gain in respect of males equivalent to an appreciation of about 1 per cent.

2. The Carlisle Table is unsuitable for employment, since the general character of the Carlisle curve is quite different from that representing the mortality of life tenants. It must be admitted that several authorities are still in favour of using the Carlisle Table, and maintain that with suitable adjustments (for female lives) the mortality basis is suitable for the purpose required. This opinion, however, is probably influenced by the fact that so many monetary tables having been calculated in conjunction with

Carlisle mortality rates, a great deal of trouble is saved by using this table.

Loans on Stocks and Shares under the new Act constitute a separate section for the first time. Comparatively few life offices do much of this class of business, which is more suitable for investors such as banks. Other offices, no doubt, find it a profitable transaction, for, when money is dear, very favourable rates can be obtained for short periods, but a conservative valuation of the securities on which the loan is advanced should be made.

The reverse operation, viz., the loan of stocks or shares is a very remunerative one. It frequently happens that the market is short of a particular stock and is willing to pay for accommodation over a limited period. The usual conditions are :—

(1) The deposit of collateral security with a fixed margin in value, such margin to be kept up.

(2) The loan to be for a minimum period.

(3) Remuneration to consist of (*a*) an agreed rate of interest calculated on the market value of the stock lent, or (*b*) a fixed commission of so much per annum calculated on the nominal amount of the stock, or (*c*) the use of the cash-equivalent of the market value over the period of the loan.

This is a very satisfactory way in which to employ the company's resources as there is no risk (owing to the deposit of collateral), the dividends remain the property of the lender, and the payment received, either directly or through the use of the cash is, in the circumstances, additional profit.

Loans on the company's policies within the surrender value are in some respects the most satisfactory investment possible, as the security, from its nature, is absolute. The disadvantages are (1) the relatively large amount of clerical work involved in dealing with a number of small amounts and (2) the comparatively low rate of interest generally charged. The negotiability of a policy is one of its main attractions, and most offices therefore, bearing in mind the business point of view, endeavour to keep the rate chargeable as low as possible, and the assured person frequently looks upon this as a right and expects to pay something approximating to Bank Rate.

Loans on Personal Security, with life assurance policies attached, constitute a very small section, and most offices have nothing to do with them. They have, however, been found to be a form of investment which is both safe and profitable when conducted under strict rules of management, and they undoubtedly assist the life business.

British Government Securities.—In the early days of insurance it was the custom to hold very large amounts of Consols (as already mentioned) but it is practically certain that for some time previous to the war, no further purchases were made, and some offices undoubtedly took the opportunity to realise part of their holdings at prices in the neighbourhood of par. Such a course was obviously right, as it is difficult to see how an investment yielding about $2\frac{1}{2}$ per cent. could be suitable for a company valuing its liabilities on a 3 per cent. basis. In 1915, the option was given to exchange Consols into $4\frac{1}{2}$ per cent. War Loan on the assumption that the former were worth $66\frac{2}{3}$ per cent., and no doubt this option was fully exercised.

The subsequent issues of 5 per cent. War Loan, 5 per cent. National War Bonds, Treasury Bonds, etc., had the effect of entirely altering the standard of British credit and, as already indicated, this resulted in the major portion of surplus insurance funds being placed in Government securities. By reason of the rise in prices and lower yields, the question of further investments of this nature, however, is one for re-consideration, and, in the immediate future, it is unlikely that any appreciable amounts will be so utilised.

Municipal and County—United Kingdom.—The stocks in this section are, of course, quite suitable for the investment of insurance funds, but, until recently, were not very largely held owing to the system of granting direct loans. The enormous demand for money for housing and other operations (deferred during the war) has necessitated many public issues of stocks and widened the market accordingly.

Indian and Colonial Government Securities form a very important group, and many opportunities occur for underwriting and applying for new loans. The yield obtainable is roughly 10*s.* per cent. in excess of that to be derived from British Government Securities.

Indian and Colonial Provincial Securities.—This is a new heading, but a very necessary one in view of the increased importance of the new loans issued by, or guaranteed by, the Canadian provinces. It may be mentioned that the best returns can be obtained by buying "dollar" bonds of issues not quoted in London and cashing the coupons abroad; if the proceeds are then reinvested in the country in which they are payable, there is no trouble or expense incurred in negotiating the rate of exchange.

Indian and Colonial Municipal Securities embrace almost every type of security, from those but little inferior to the gilt-edged group to those of a somewhat speculative character. The yields vary considerably—from 5 to 7 per cent. and, prior to the war, particular attention was paid to the Canadian townships. Care should be taken to restrict the amount invested with any one municipality, and to note particularly the legality of the issues and the financial position of the borrower.

Foreign Government Securities, as we have seen, have come into favour in the most remarkable manner during the last twenty years or so, and, in view of the large amounts required for reconstruction, railway extensions, etc., are likely to remain so for some time to come. The quality of the various state issues differs considerably and requires careful investigation. With some countries, such as China, it is desirable to have specific security in addition to the Government obligation.

Foreign Provincial Securities.—Very few of these are quoted on the London Stock Exchange, but in pre-war days it was possible to make an extensive choice of Continental issues in foreign currencies. The situation is now quite different owing to the collapse of so many of the exchange rates.

Foreign Municipal Securities afford a splendid field for investment, but careful and expert selection is necessary. The interest on some loans issued abroad is subject to deductions of various foreign taxes, whilst the terms of redemption are most important, and may have a very great bearing on the interest yield. Repayment is generally carried out by means of a sinking fund applied to annual drawings at par, and (or) purchases below that figure. The exact yield is, therefore, frequently problematical.

Railway and other Debentures and Debenture Stocks.—This is a very comprehensive, but at the same time a somewhat indefinite, group, and, includes many kinds of securities having little or nothing in common with each other. Home railway debentures yield comparatively low rates, and most of the present holdings of insurance companies are due to old purchases. Colonial railways consist almost entirely of Canadian issues, and the security of these varies enormously; some are decidedly speculative, whilst others, such as those of the Canadian Pacific, are gilt-edged. Again, many stocks and bonds are guaranteed, both as to principal and interest, by the Dominion or Provincial Governments, and can usually be bought to yield substantially more than the direct issues of the Government's own stocks, despite the added security of the line itself.

The Indian Railway Debentures are of two kinds:—(1) guaranteed by the Indian Government and (2) unguaranteed, *i.e.*, depending on the value and earnings of the railway itself. The latter naturally show a higher yield.

Foreign and American Railway Debenture Stocks and Bonds require careful investigation, but there is an almost limitless field here for funds requiring an outlet. Expert advice is frequently required as the nomenclature of railway bonds in the U.S.A., in particular, is sometimes very misleading. Although very large sums were formerly invested in this latter class of security, the imposition of American income tax and the necessity for realising Dollar Securities during the war, has reduced insurance companies' holdings very materially, and probably only those offices doing business in the U.S.A. now have any appreciable holding of such bonds.

The debentures of industrial companies also form a most varied group; the chief points to be noted in examining the security offered are (1) the company as a going concern, (2) the property charged, (3) the nature of the mortgage, (4) the class of business carried on, etc. About thirty years ago, the yield on home industrial debentures was extremely low, in some cases only 3¼ per cent., and in most of the companies of any standing barely 4 per cent. For example, the 3½ per cent. debenture stock of the City Offices Company was quoted at 111½ in 1896, thus showing a yield of less than £3 3*s*. *od*. per cent; while in 1911 the market price was as low as 79½, giving a yield of nearly 4½ per cent. In May 1922, the market quotation had fallen to 65 and the interest yield had risen to about 5⅜ per cent.

Before leaving this section, perhaps I ought to draw attention to what are known as public utility bonds, which constitute one of the most interesting financial developments in the United States of America in recent years. These securities, when issued under certain conditions, are, I believe, a legal investment for savings banks in several of the States. Examples of such securities are the bonds of gas, electric light and power companies, street railways, etc.

Railway and other Preference and Guaranteed Stocks.— Most of the railway prior charge stocks are trustee securities and the yield is correspondingly affected thereby. Very large sums used to be invested in these securities, but the competition of other forms of transport and the continuous fears of strikes and other labour troubles have seriously injured their popularity in recent years. At the moment, owing to amalgamations, consummated and projected, the exact margin of security in particular cases is uncertain. The amount of cover behind these stocks is also problematical because of the doubt that exists in certain quarters as to the railway companies' ability to work at a reasonable profit now that they are de-controlled.

Until comparatively recently, the preference stocks of industrial companies were not reckoned to be up to the requisite standard, but there are now probably an appreciable number of such securities included amongst the assets of insurance companies. Here again, careful selection is essential, but an excellent list might be made from the gas, electric light, telegraph, water and trust companies groups.

As to *Ordinary Stocks and Shares*, I think there can be no question that they are entirely unsuitable for the funds of insurance companies. Not only does the dividend thereon vary, but the market value is subject to such violent fluctuations as to introduce a very decided speculative and dangerous element.

There are, as will be seen from the Schedule given earlier in this chapter, still a certain number of shares of this type of security held, but for the most part, they consist either of purchases made a long time ago, when the financial outlook was entirely different, or of certain stocks which have a minimum guaranteed rate of interest and which do not rightly belong to this section.

Rent Charges are a small group and need not be discussed at length; for the most part the security is excellent and the return satisfactory.

Freehold and Leasehold Ground Rents and House Property were, until quite recently, a very favourite form of investment with certain companies, but, as a result of the notorious Finance Act of 1909-10 and the possibility of future legislation in this quarter, there has been a decided "slump," both in the amounts purchased and the prices obtained. In fact, many of the alterations in the figures of the various balance sheets have shown a decrease resulting from the necessity of drastic writings down. In no class of investment is expert advice more essential before a purchase is decided upon than in this; and furthermore, it must be noted that competition from other sources should not be allowed to affect a company's own valuation, as it frequently happens that there are special reasons for certain parties wishing to acquire the property offered. In other words, the same property may have an entirely different value to two prospective buyers.

The percentage so invested is higher than that of the year 1910, but this improvement is probably due to money spent in the erection of new head and branch offices necessitated by the extension of business.

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CHAPTER XIV.

INCOME TAX.

By C. H. Maltby, F.I.A.

(1) The Assessment of Life Assurance Business for purposes of Income Tax.

(2) The Allowance made in respect of Life Assurance Premiums.

(1) Assessment of Life Assurance Business to Income Tax.

The liability of insurance companies to income tax arises mainly under Schedule D of the Income Tax Act of 1918, which imposes the tax upon all annual profits or gains, accruing to any person or persons resident in the United Kingdom, from any property, profession or trade whatsoever, whether it is situated or carried on at home or abroad. Persons resident abroad are similarly bound to pay tax upon the profits arising from any property or business situated within the United Kingdom.

The tax is further imposed upon "all interest of money, annuities, or other annual profits and gains," interest being taxed as such, in much the same way as tobacco.

Schedules A and B.—A small amount of income tax is also paid by insurance companies under Schedules A and B of the same Act, which, together, impose the charge upon landed property.

Schedule A taxes the *owners* of land and houses in respect of the property therein, while Schedule B taxes the *occupiers* in respect of the benefit derived from the *occupation* thereof. Under both Schedules, the tax is, in the first instance, paid to the Government by the occupier, who subsequently—if he is a tenant—deducts the tax under Schedule A from the next instalment of rent paid to his landlord. The landowner, in his turn, deducts a proportionate amount, when paying any rent-charge or annuity charged on the land, or the interest on any mortgage thereof. These Schedules are, however, comparatively unimportant from the present point of view, and, beyond this very brief reference, will not be referred to again. In passing, however, it may be pointed out that they give a simple example of the keynote of the income tax system—"collection at the source."

Schedule D.—Since the last edition of this volume many changes have been introduced into the assessment of life business for income tax under Schedule D; and those who are interested in the historical details of the subject should refer to the Seventh Instalment of the Evidence given before the Royal Commission on the Income Tax [Cmd. 288-7-1920] which in Appendix No. 7 contains a concise historical note, which it would be difficult to beat for brevity and completeness.

Briefly the present position is as follows:—

1. In all cases the life assurance business of a company must be treated as a separate business for income tax purposes; even if other branches of insurance are transacted by the same company. (Income Tax Act, 1918* [8 & 9 Geo. 5, Ch. 40], Schedule D, Cases I. & II., Rule 15 (1).) The definition of life assurance business expressly includes (Sec. 237) the business of granting annuities; and although it is not defined in the Act, the definition to be adopted presumably follows that given in the 1909 Act.
2. Tax has to be paid on all interest credited to the life department, whether the interest is actually received in this country or not. The only question is: "Is this money interest?" If so, tax must be paid upon it. (Schedule D, 1 (*b*) and Schedule D, Case IV. 1 and Case V. 1.) For the most part tax is paid by deduction at the source; but if any interest is received from which tax has not been deducted, the latter must be accounted for to the authorities direct. There are two exceptions to this rule, interest on the foreign life assurance fund, and on the annuity fund, which are dealt with more fully hereafter.
3. The office, however, is entitled to repayment of the tax on its life expenses of management (including commission). (Section 33.)
4. Should, however, its profits exceed the amount of the investment income less expenses it has, in addition, to pay tax on the excess.

Thus there is a dual basis of taxation, profits or the investment income less expenses, the tax being charged on the greater of these two amounts. Usually, in the case of an ordinary office, the interest basis is the larger, and tax is accordingly paid upon it; but in the case of industrial offices, since the ordinary and industrial branches are combined, the heavy expenses of the industrial branch usually mean that the profits exceed the net interest. That is, ordinary offices are usually taxed upon interest, industrial offices upon profits.

* Hereafter all references to Sections, etc., will relate to the 1918 Act, unless otherwise stated.

Interest Basis.—Although the general position is as stated above, many details arise in practice, and the bases mentioned will now be dealt with more fully. As regards interest—under which term is included the whole of the investment income—the larger portion of the tax will usually be paid by deduction at the source before the interest reaches the office. A return of any untaxed interest must also be made (whether the interest is payable within, or out of, the United Kingdom) and tax paid upon it; the basis of assessment being the amount arising during the year preceding the year of assessment. (Sch. D, Case III., Rules 1 and 2, as amended by 1922 Act, Sec. 17.) The basis of assessment is, however, a little different in the case of foreign income other than interest in the strict sense of the word, and is as follows:—

(*a*) Income arising from foreign securities is assessed on the amount arising during the year of assessment. (Sch. D, Case IV., Rule 1.)

(*b*) Income arising from foreign stocks, shares and rents is assessed on the average of the amounts arising in the three office financial years preceding the year of assessment. (Sch. D, Case V., Rule 1.)

(*c*) Income arising from foreign possessions other than those mentioned in (*a*) and (*b*) is assessed on the average of the amounts actually received in the United Kingdom during the three preceding office financial years. (Sch. D, Case V., Rule 2.)

In the case of remittances from abroad, the rate of exchange is usually taken as the rate current at the time when the remittance is made, irrespectively of the rate assumed for account purposes; but it is believed that individual arrangements are often arrived at with the Inland Revenue on this point.

Bank Interest.—The office is entitled to repayment of tax on any interest which has been paid to a bank, a member of a Stock Exchange, or a discount house in the United Kingdom, without deduction of tax. (Section 36.)

Expenses.—It is also entitled to repayment of tax upon an amount equal to its expenses of management during the year of assessment. (Section 33.) The term expenses includes commission; and, subject to certain minor adjustments, the amount allowed is the sum of the two items mentioned, as shown in the Revenue Account. From them have to be deducted the amount of any fines, fees or profits arising from reversions. Losses arising from reversions during any previous year may, however, be set off against the last item.

Thus the adjusted expenses are:—

Expenses of management +Commission +Brokerage charged under investments and the like +Loss on reversions.	*less*	Fines and fees +Profit on reversions +Charitable donations and the like.

Notice of the claim under this heading has to be given within twelve months after the expiration of the year of assessment in respect of which the claim is made.

Foreign Life Fund.—If an office transacts business outside the United Kingdom the investment income arising from the foreign life fund is—under certain conditions—exempted from tax.

These conditions are that the investment income:—

(1) should arise and be retained or reinvested abroad (Sch. D, Case IV., Rules, No. 2 (*b*) and Case V., Rules, No. 3 (*b*)), or

(2) should arise from certain British Government securities issued during the war and be applied for the purpose of the foreign life fund or reinvested so as to form part of that fund (Sec. 46, par. (2)), or

(3) should arise abroad, be remitted home, and invested in one of the securities mentioned above, as part of the investments of the foreign life fund. (Sec. 46, par. (3) .)

In regard to (1) it may be said that in *Gresham Life* v. *Bishop* (1902) it was decided that taking credit for interest in the accounts was not equivalent to its receipt in this country and the interest must actually and physically be received here.

The foreign life fund is defined (Sec. 237) as any fund representing the amount of the liability of an assurance company in respect of policyholders or annuitants residing outside the United Kingdom, whose contracts were entered into by the company at or through a branch or agency outside the United Kingdom. This definition differs slightly from that in the 1909 Act, but it is understood that the division intended is that made in the Board of Trade Returns. If—as is usually the case—a separate foreign fund is not kept it is interpreted as the liability under such policies on the valuation basis.

Where the interest on a foreign life fund is exempted from tax, a corresponding reduction is made in the relief granted in regard to expenses. (Sec. 33 (5) .) The word "corresponding" used in the Act is ambiguous; but it is usually interpreted as meaning that the expenses should be split into home and foreign, in the same proportions as the interest income.

Annuity Fund.—For income tax purposes the general position of annuities varies accordingly as the annuities are, or are not, payable out of profits or gains liable to taxation, and may be summarized briefly as follows :—

1. *If the annuities are payable out of taxable profits or gains*, the company pays tax on its total profits, and recoups itself by deducting the tax from the annuities and retaining it.
2. *If the annuities are not payable out of taxable profits or gains*, the company deducts the tax from the annuities and hands it over to the authorities. If the annuities are not wholly payable out of taxable profits or gains, the company must hand over the tax on so much of the annuities as is not payable out of taxable profits.

These rules apply to all annual interest, annuities or other annual payments, and are not peculiar to insurance offices. In the case of a life insurance office, it was decided by the House of Lords, in *The Edinburgh Life Assurance Company* v. *The Lord Advocate*, 1910, that life annuities could be treated by the office as paid out of the taxed interest earned on the whole of the life and annuity funds. This, however, was afterwards modified by legislation, and the 1918 Act lays down that the amount of annuities which a life assurance company is entitled to treat as having been paid out of taxed interest shall not exceed the taxed income of its annuity fund. (All Schedules, Rules, No. 21, subsection 3.)

Where a separate annuity fund is not kept "annuity fund" is defined as the liability under annuity contracts as shown in the Board of Trade Returns. (Section 237.)

In normal circumstances, the taxed interest on the annuity fund will usually be less than the annuities paid away; so that, in effect, this interest is received free of tax; the office deducting and handing over to the authorities the tax on the annuities less an amount equal to the tax deducted at the source from the interest of the annuity fund.

Payment of Annuities Free of Tax.

By a concession granted by the Inland Revenue, arrangements have been made under which life offices may pay annuities in full, without deducting tax, to persons (resident in the United Kingdom) whose total incomes from all sources do not exceed £135 if single, or £225 if married. Tax may also be deducted at one-half the standard rate from annuities paid to persons resident in the United Kingdom whose total incomes do not exceed £500, whether married or single. In all other cases, tax has to be deducted at the full standard rate, and the annuitant has to obtain from the authorities any refund to which he or she may be entitled.

In order to take advantage of this concession, the annuitant has to complete a declaration as to income; and these declarations are sent to the authorities by the life office, together with the names and addresses of the annuitants concerned.

If the annuitant is not resident in the United Kingdom, the office has to deduct tax at the full standard rate when paying the annuity (unless the latter is charged on the foreign life fund); although, in certain circumstances, the annuitant can claim from the I.R. a refund of part, or all, of the tax deducted. These circumstances are set out in the Finance Act, 1920, Section 24. Briefly, all British subjects can claim a refund; also persons who previously resided in the United Kingdom and now reside abroad for the sake of their health or that of their family; persons who are, or who have been, employed in the service of the Crown, any missionary society, or any protected native state; residents in the Isle of Man or the Channel Islands; a widow whose late husband was in the service of the Crown.

We believe, however, that the I.R. are willing to consider a special application from an annuitant resident abroad, and in suitable cases to authorise an office to pay the annuity, either free of tax or under deduction at half the standard rate, for a limited period, at the end of which time fresh particulars have to be furnished.

Annuities as "Wasting Assets."—Under a life annuity each payment is, of course, partly interest on the capital sunk, and partly a refund of the capital itself; so that tax is charged upon capital as well as upon interest. Many attempts have been made to convince the authorities that this is unfair, but without success. The matter was last argued before the Royal Commission of 1920, who, however, decided against recommending any alteration of the present position. As applied to annuities, the question is only a particular case of a very much wider one which affects all leaseholds and the like; and the grounds of the decision of the Commission were, briefly, that in such cases the capital changes hands rather than suffers actual destruction, and that to recognise any such principle as that asked for would involve an enormous loss to the Revenue. (See Report of the Royal Commission, p. 41.)

Interest Basis. Summary.—The preceding pages may be summarized into the schedule form annexed, which gives a general outline of the basis of assessment of a life office taxed upon an interest basis.

Investment Income.

NATURE.	Life.	Annuity.	Total
Income taxed at source			
Income untaxed at source arising in U.K. (1)			
Income untaxed at source arising out of U.K.			
(*a*) From Interest ... ... (1)			
(*b*) „ Securities			
(*c*) „ Stocks, Shares and Rents (2)			
(*d*) „ Other Property ... (3)			
Gross Investment Income.			A.

Allowances.

Income on Foreign Life and Annuity Funds.			
(*a*) Received and kept abroad			
(*b*) Arising from War Securities			
(*c*) Received here but invested in War Securities			
		Total	
Expenses of Management and Commission.			
Less Fines and Fees			
Profit on Reversions ...			
Minor Items			
Adjusted Net Amount.			
Less Proportion attributed to Foreign Life Fund ...			
		Total	
Interest on Bank Loans paid by Office in full.		Total	
Interest on Home Annuity Fund (if less than Annuities paid away).		Total	
Total Allowances.			B.
Taxable Annuities paid away.			C.

The office has to account for the tax deducted from the annuities C, and is then liable for the tax on A-B, less any tax paid by deduction at the source. If B should exceed A repayment of expenses can only be claimed up to an amount equal to A.

All the amounts mentioned above are taken for the year of assessment except :—

(1) Computed on the full amount arising in the year preceding the year of assessment.

(2) Computed on the amount arising therefrom on an average of the three preceding office financial years.

(3) Computed on the amount received in the United Kingdom on an average of the three preceding office financial years.

Profit Basis.—Certain rules for taxation on the basis of profits were laid down by the House of Lords in the case of *Last* v. *The London Assurance Corporation*, 1885, some of which are till applicable. It was decided that the profits arising from life business could only be ascertained by an actuarial investigation, and that they were not the balance of receipts over payments in any particular year. It was also laid down that the bonuses allotted to policyholders formed part of the taxable profits; the London Assurance Corporation being, of course, a proprietary office.

In the case of a mutual office the position is quite different, and it was laid down by the House of Lords, in the case of the *New York Life* v. *Styles*, 1889, that in such an office, the only true profits are those derived from its business dealings with non-members; that is, otherwise than from "with profit" policies. The bonuses allotted to policyholders are to a large extent only a refund of the excess premiums charged by the company, as a business precaution, over those actually required, and hence they are not profits chargeable with tax.

At the moment, however, the point is of little practical interest, since in all mutual offices the net investment income exceeds the profits and they are accordingly taxed upon an interest basis. The mutual offices, moreover, have expressed their willingness to abandon the benefit of this decision, and to pay tax upon their "profits," if the authorities should agree to abandon the interest basis and to charge tax upon profits alone. The New York case is, however, still of interest in so far as it prevents the dual basis from operating in the case of mutual offices.

For income tax purposes, the profits of a life office are taken on the basis of the surplus disclosed at the last valuation, one-fifth of this amount (assuming quinquennial valuations) being considered to be the profits for each of the succeeding five years. This valuation surplus has, however, to be adjusted by deducting therefrom any amounts brought forward from previous investigations as tax on these has already been paid. It is also necessary to add thereto any payments made out of profits by way of interim bonuses during the valuation period and certain items of expense such as "donations to charity" which, while reducing the profits, are not admissible for income tax purposes.

Changes in the values of Assets.—If a security has been sold during the quinquennium so that a profit or loss is actually realised, the amount of this profit or loss is allowed to stand in computing the profits. Amounts, however, which have been written off or transferred to an investment reserve to provide for depreciation, and which have not been actually realised, have to be restored in computing the taxable profits. Similarly, any appreciation which has taken place, though taken credit for in the accounts and divided in the form of bonuses, would be deducted from the surplus.

It is also necessary to adjust the surplus by deducting therefrom the interest taxed at source during the quinquennium, as tax on this has already been paid.

Profit Basis: Summary.—The return of an office taxed upon the basis of profits will accordingly take the following form :—

Valuation surplus at the last Valuation, 31st December, 1918 (say) :—

Add	Interim Bonuses paid	during quinquennium.
	Depreciation written off	
	Amounts carried to Investment Reserve	
	Income Tax paid on Life Interest Income	
	Expenses disallowed	
Less	Surplus brought forward from 1913 ...	

Adjusted Surplus ... ...

Deduct

Interest, etc., taxed at source during quinquennium
Less Taxed Interest on Annuity Fund ...

Net adjusted surplus ... ...
1/5 ... ... F.

This amount F will then be the amount on which the office is assessed direct for each of the following five years. In addition, it will pay tax by deduction at the source from part of its investment income, and will have to hand over to the authorities the tax deducted from Annuities less the Income taxed at source of the Annuity Fund. That is for the years of assessment 1919 to 1923 inclusive, it will pay tax on :—

Amount F above ... ...
Investment Income taxed at source ...
Annuities paid away ... ...

Less

Income of Annuity Fund taxed at source

Total

(the last three items being taken for the year of assessment).

As already stated, the Profit basis would be abandoned and the Interest basis adopted, in any year when the latter was more profitable to the Revenue.

Taxation of Foreign and Colonial Companies.—A company not having its head office in the United Kingdom is assessed upon its

$$\frac{\text{(Total Investment Income less Total Expenses)} \times \text{British Premiums}}{\text{Total Premium Income.}}$$

"British Premiums" are defined as premiums received from residents in the United Kingdom or from policyholders resident abroad whose proposals were made to the company through its branch or agency in the United Kingdom. (Sec. 33-4 and Sch. D, Case III., Rule 3.)

This assessment is reduced by the amount of any investment income taxed at the source in this country; or is discharged if the taxed income be the larger amount.

The Commissioners have power to substitute some other basis in the case of any company having its head office in a British Possession.

Royal Commission, 1920.—For many years life offices have been trying to obtain a revision of the basis upon which they are assessed and the questions involved were dealt with by the Royal Commission of 1920, when evidence was tendered separately by the English and the Scottish life offices. The two cases presented differed slightly and were as follows :—

English Offices—

(*a*) That the option of selecting either interest less expenses, or profits, claimed by the Inland Revenue should be disallowed.

(*b*) That the equities of the two methods of assessment should be considered by the Commission; the offices, however, bringing forward arguments in favour of profits as the equitable method of assessment.

(*c*) That whichever method is selected, life offices should not be taxed at the full standard rate in view of the fact that the policyholders upon whom most of the tax falls are not as a whole liable to this rate.

The case presented by the Scottish offices followed on similar lines as regards (*a*) and (*c*); but stated that they were content that interest less expenses should continue to be the basis of assessment, if the other points were conceded.

Both parties agreed that any amounts taken by shareholders must bear their appropriate share of tax.

In the evidence presented on behalf of the Inland Revenue it was contended :—

(*a*) That the dual basis is not peculiar to life offices, but is common to all taxpayers; and that it was not until 1915 that a relaxation of the general rule was allowed in the case of investment and assurance companies by permitting the expenses to be deducted. It is in accord with the general conception of the income tax that all persons who directly, or indirectly, receive interest should be taxed in respect of such interest.

(*b*) That the "profit" (or valuation surplus) is composed partly of premiums provided by the policyholders, and partly of investment income. It excludes, however, the major portion of the investment income as this is deducted and credited to the policyholders in the process of ascertaining the reserves before the surplus is arrived at. Thus, the surplus includes a portion of the premiums which, so far as they are returned to the policyholders, are not a fit subject of charge; and excludes a large portion of the interest income which should be charged. The valuation surplus is accordingly not a suitable basis of taxation. Moreover, it depends on the valuation basis, which may be varied at the will of the actuary.

(*c*) That since the essence of the business, by which income is earned, is the business of investment, the measure of the profits is the excess of the investment income over expenses. To this, certain additions should be made, the basis of assessment suggested being the larger of (A) and (B) below.

A. Investment income of life fund.
+Income from fines and fees.
+Profits from reversions.
+Gross profits from annuity business.

Less—
Expenses of management of both life and annuity funds.
+Losses on reversions.
+Losses on annuities.
} Presumably, though this was not stated.

B. Any amounts retained by the proprietors.

A would be subject to adjustment for the foreign life fund in so far as its income is applied to the policyholders of that fund.

This basis should be applied separately to the ordinary, and to the industrial branches of an office carrying on both classes of business.

(*d*) On the question of a reduced rate of tax, that this subject is bound up with the question of the allowance made in respect of insurance premiums. The I.R. admitted that the present system causes great inequalities between different classes of policy-holders and that it is conceivable that an increase in the rate of tax might be so heavy as to cause the failure of a life office. It is admitted also that, under present conditions, the burden is mostly borne by the holders of "with profit" policies.

They suggested that if the allowance in respect of insurance premiums were limited to one-half the standard rate, the balance would suffice to permit the investment income of a life office to be charged at three-quarters of the standard rate; the net result being fairer to the policyholders as a whole, without involving any loss to the Revenue.

In regard to the Inland Revenue's arguments, it may be pointed out that while it is true that the dual basis exists in all cases, an ordinary individual, while he is obliged to pay tax on all his investment income, recovers tax on so much of it as is afterwards paid away by him to other parties. In the case of a life office, although the greater part of the investment income is paid away, it is impossible to recover the tax; and it is due to this that the greater part of the tax is borne by the holders of "with profit" policies. Also, although the valuation basis does affect the surplus in any particular year, its main effect is upon the date when the profit is taken; so that the surplus disclosed at successive valuations does in the long run represent the true profit earned by an office. If the rate of tax were constant, and a closed fund were considered, the result of charging tax upon the surplus would be that exactly the proper amount was paid upon the whole of the profits earned.

In their Report, the Commission recommended that no changes should be made in the existing position; except that while the dual basis should remain, the "profits" assessed should not be the valuation surplus, but only the amounts taken by the shareholders. So far as most ordinary offices are concerned, this would mean that the dual basis ceased to exist and that the basis of assessment was interest less expenses. Industrial offices, however, would continue to be assessed on profits. To this section of the Report, however, is appended a most important reservation which supports the contentions of the English offices and counters many of the arguments upon which the main Report was based.

(2) THE ALLOWANCE MADE IN RESPECT OF LIFE ASSURANCE PREMIUMS.

As is generally known, an allowance is made in respect of Life assurance premiums in computing a person's liability for income tax. This allowance was first made as long ago as 1799 in order to assist taxpayers with precarious incomes to provide for their families; but it was restricted in 1806 to persons with incomes less than £150 per annum, and dropped when the tax was reimposed in 1842. It was, however, revived in 1853 in order to mitigate the taxation of savings, and has been a feature of the tax since that date.

At the present time, the allowance is subject to a number of rules and restrictions under Section 32, as amended by the 1920 Act, Section 26.

1. The insurance must be:—
   (*a*) On the life of the person claiming the allowance; or
   (*b*) On the life of his wife.

In the case of a married woman the allowance extends to a premium paid by her out of her separate income in respect of an assurance on her own life or the life of her husband. Except in the case of husband and wife, or of partners, the allowance is not granted in respect of joint-life policies.

2. The policy must be issued by :—

(*a*) An insurance company legally established in the United Kingdom, or in any British Possession. In the latter case, apparently, the office need not transact business in the United Kingdom ; or

(*b*) A company lawfully carrying on business in the United Kingdom ; or

(*c*) A registered friendly society ; or

(*d*) The National Debt Commissioners. These only grant immediate and deferred annuities.

The allowance is also made in respect of any sum paid, or deducted from salary, under an Act of Parliament or the terms and conditions of the person's employment, for securing either a deferred annuity to his widow or provision for his children after his death. In the case of contracts entered into after 22nd June, 1916, the payment must be made in connection with a *bona fide* pension scheme. (See " Superannuation Schemes," below.)

3. The allowance is fixed at the amount of the premium paid, subject to certain limitations referred to later. Until 1920 the words used were " annual premium " ; but as the word " annual " is omitted in the 1920 Act in accordance with the Report of the Royal Commission 1920, it will be seen that single, as well as annual premiums, are now allowed to rank for the allowance. A single premium is, however, subject to the same restrictions as annual premiums and notably to the limitation to 7 per cent. of the sum assured. That is, if the assured pays a single premium of £50 per cent. he can claim an allowance on £7 per cent. for the year when the payment is made. Nothing can be claimed in subsequent years.

In view of the words used in the Act " premium paid by him," only the actual amount paid by the assured is allowed to rank.

In the case of *Hunter* v. *The King*, 1904, it was decided by the House of Lords that an assured under a " half credit " policy was only entitled to claim the rebate in respect of so much of the premium as was actually paid by him in cash.

Under the policy in question the assured had signed an agreement to pay to the office the principal sums advanced, thus importing his personal liability for the debt. In theory, the terms of this judgment appear to be sufficiently wide to include all cases where the assured borrows from the office on security of the policy in order to pay the premiums ; but no case is on record where the latter point has been actually raised. It could, of course, be easily evaded.

Where the premiums have been reduced by application of bonus, only the reduced premium can be brought into account. Possibly, however, the cash value of the bonus surrendered could be considered as a single premium, and a rebate claimed thereon, for the year when the reduction is made.

When commission is payable to the assured, it appears that the rebate should be claimed in respect of the gross premium, and that the commission should be brought into account as part of the assured's income, although it is seldom material which course is adopted.

4. The allowance is granted by reducing the tax payable by a sum equal to the tax at a certain fixed rate on an amount equal to the premiums. The last are not deducted from the assessable income and so the allowance does not reduce the total taxable income. Neither do assurance premiums affect the amount of super tax payable. The total premiums upon which an allowance can be claimed, are limited to one-sixth of the total chargeable income from all sources.

Up to this point, the rules given affect all policies alike ; but the further position varies according to the date at which the insurances were " made."*

Assurances made on or before 22nd June, 1916.

5. If the policy secures a capital sum at death (whether in conjunction with any other benefit or not) the amount of the premium in respect of which the allowance can be claimed is limited to 7 per cent. of the actual capital sum assured. In calculating this capital sum no regard is paid to :—

- (*a*) Any sum payable otherwise than on death.
- (*b*) The value of any premiums agreed to be returned.
- (*c*) Any benefit by way of bonus or otherwise which is not the sum actually assured.

That is, it is limited to the amount guaranteed by the policy to be payable at death. In the case of a policy subject to an " Under Average " debt the maximum allowance is 7 per cent. of the reduced sum assured.

Most of the life policies issued by offices come under this section. Endowment assurances and the like are included ; and the Inland Revenue have, we believe, stated that in their view the section precludes the possibility of splitting the premium paid on a policy securing other benefits in addition to a sum payable on death ; and have stated that they had no intention of attempting to split the premium under such a policy.

It may be mentioned in passing that an allowance is also made in respect of that portion of the premium paid under a sickness or accident policy which is applicable to the death risk.

* Apparently this word has never been legally defined. The point can only affect a very few contracts ; and probably the date should be taken as that of the first premium receipt, since it is this document which renders the contract complete.

6. In the case of policies under which no capital sum is payable at death, such as deferred annuities, pure endowments, and the like, the amount of the premiums in respect of which an allowance is given is limited to £100 in all.

7. The rate of tax at which the allowance is to be calculated varies with the total income from all sources and is :—

Not exceeding £1,000, one half the standard rate.

Over £1,000 but not exceeding £2,000, three-quarters of the standard rate.

Exceeding £2,000, the full standard rate.

Assurances made after 22nd June, 1916.

8. The provisions affecting policies securing a capital sum at death (No. 5 above) remain unaltered ; except that no allowance is now made in respect of the premiums payable during the period of deferment under a policy of deferred assurance.

9. No allowance whatever is made unless the policy secures a capital sum at death. That is, no allowance is now made in respect of the premiums for pure endowments, or deferred annuities. An exception is, however, made in regard to premiums payable under a superannuation, or *bona fide* pension scheme. These are dealt with below.

10. The rate of tax at which the allowance is to be calculated is limited in all cases to one-half the standard rate.

Superannuation Schemes.

Under Section 32, 3 (*c*) and Finance Act, 1920, Section 26 (6), the allowance can be claimed in respect of premiums or payments payable under policies issued under any superannuation or *bona fide* pension scheme which provides benefits for any person, (or his wife, widow or children) employed by any employer, or engaged in any particular trade, profession, etc. The allowance is also extended to any policy effected by a teacher in a secondary school pending the establishment of a pension scheme for such teachers.

In such cases, the allowance is granted in respect of deferred annuities or pure endowments up to a limit of £100, irrespectively of the date when the policy was made. So far as claims under these sections are concerned, it does not appear necessary for the fund to be "approved" by the Commissioners. It is apparently only necessary to prove that such a *bona fide* fund exists.

There are, however, great advantages attached to "approved" funds by the Finance Act, 1921, Section 32. In such cases, the income derived from investments is exempted from tax, and any annual sum paid by an employer or employee is allowed to be deducted from the assessments under Schedule D or E as an expense incurred in the year in which the sum was paid. It cannot, however, also rank for an allowance as an insurance premium. In the case of an employer, a payment other than annual can be either treated as a deduction in one sum, or spread over a number of years at the option of the Commissioners. Before a fund can be approved it is essential to show that :—

(*a*) It is *bona fide*, and established under irrevocable trusts, in connection with some trade or undertaking carried on in the United Kingdom by a person residing therein.

(*b*) Its sole purpose is to provide annuities for employees of that undertaking, either on retirement at a specified age, or on becoming incapacitated at some earlier age.

(*c*) The employer is a contributor to the fund.

(*d*) It is recognised by the employer and the employees.

The Commissioners may approve a fund, subject to such conditions as they think fit, notwithstanding that :—

(*a*) The contributions are returnable under certain contingencies.

(*b*) Granting annuities is not its sole purpose although this must be its main purpose.

(*c*) The undertaking is only partly carried on in the United Kingdom and by a person not residing therein.

The Commissioners may make (and, in fact, have made) regulations for the purpose of carrying out this part of the Act. They are particularly given powers to provide for tax being charged on any sums repaid to a contributor—as, for example, on withdrawal or surrender—or paid to him on the commutation of, or in lieu of, an annuity.

By the Finance Act, 1922, Section 31, contributions made by any individual towards superannuation benefits under any public general Act of Parliament are allowed as a deduction from his income. Provision is, however, made for the deduction and recovery of the tax in any case where the contributions are returned.

Table of References.

The following is an index to the various sections in recent Finance Acts of special interest to life insurance companies. All the references relate to the 1918 Act unless otherwise stated.

Abatement in respect of Life Insce. Premiums	Secs. 32 & 45. 1920 Act, Sec. 26.
Annuity Fund. Exemption of interest on ...	All Schedules. Rule 21, Sec. 3.
Annuities paid out of profits and gains ...	Sec. 209.
Annuitants not resident in United Kingdom	1920 Act, Sec. 24.
Bank Interest. Relief in respect of	Sec. 36.
Definitions. Annuity Fund, Foreign Life Fund, etc.	Sec. 237.
Expenses. Rebate in respect of	Sec. 33.

Foreign Life Assce. Fund.	Relief in respect of expenses ...	Sec. 33.
	Securities issued free of tax held by	Sec. 46.
	Exemption of interest on ...	Sch. D. Cases IV. & V. Rules 2 (*b*) & 3 (*b*).
Foreign & Colonial Coys.	Relief in respect of expenses	Sec. 33-4.
	Taxation of ...	Sch. D. Case III. Rule 3.
Interest, Bank.	Relief in respect of	Sec. 36.
Interest paid out of profit and gains		Sec. 209.
Interest	All interest charged	Sch. D.
Interest paid out of profits		Sch. D. Cases I. & II. Rule 3 (*l*).
Interest income to be treated as part of life profits		Sch. D. Cases I. & II. Rule 15.
Interest, discounts, etc.	Taxed	Sch. D. Case III. Rule I.
Life Insce. Prems.	Abatement in respect of ...	Sec. 32. 1920 Act, Sec. 26.
	Calculated with reference to pre-war income ...	Sec. 45.
Life Assce. Coys.	Rebate in respect of expenses	Sec. 33.
	Separation of Life business	Sch. D. Cases I. & II. Rule 15.
	Interest Income to be part of profits	Sch. D. Cases I. & II. Rule 15.
Superannuation and Pension Funds		1921 Act, Sec. 32. 1922 Act, Sec. 31.

Royal Commission on the Income Tax, 1920.

Evidence.

Given on behalf of Life Offices. Vol. V. (Cmd. 288-5-1919), p. 826.
Given on behalf of Inland Revenue (Mr. M. C. Furtado), Vol. VII. (Cmd. 288-7-1920), p. 1346.

Historical Notes.

Allowance for Insurance Premiums	Vol. I., Appendix 7 (*f*), p. 60.
Taxation of Life Offices	Vol. VII., Appendix 7 (*s*), p. 172.

Report.

Allowance for Life Assurance Premiums	p. 64.
Wasting Assets—Life Annuities ...	p. 44.
Taxation of Life Assurance Companies	p. 111.
Taxation of Life Assurance Companies. Reservation by Mr. G. Marks, F.I.A.	p. 145.
Superannuation Funds	p. 70.

Note.—In view of the nature of the subject, it is not practicable to make any suggestions with regard to reading other than to refer students to a standard work such as S. Dowell's "The Acts relating to the Income Tax," and to draw their attention to the recent paper by Mr. John Barnett (T.F.A., Vol. ix., p. 65).

CHAPTER XV.

LIFE ASSURANCE ACCOUNTS.

By A. G. CUDLIPP.

THE Accounts of Assurance Companies have to be rendered in accordance with the provisions of the Assurance Companies Act, 1909. Although this Act is to a large extent, a repetition of the Life Assurance Companies Act, 1870, it nevertheless marks the latest definite stage in the history of Life Assurance.

There have been promoted, recently, two Bills seeking to impose further control on Assurance Companies, and should these ever reach the Statute Book, the Act of 1909 may be amended to some slight extent. In view of the uncertainty that surrounds their ultimate issue, it is of little use to discuss their purport in detail, especially as one, the Industrial Assurance Bill, at present deals exclusively with Industrial business, and the other, the Assurance Companies Amendment Bill, consists only of one clause which seeks to make Assurance Companies publish the individual details of each of their investments or mortgages, apart from loans on their own policies.

Presumably the detailed list would be published as a supplement to the Balance Sheet. The system of accounting would not be affected. Whatever may be their outcome, however, it will still be essential for all who deal with Assurance Accounts, to have a clear and accurate knowledge of the requirements of the 1909 Act.

The aim of this chapter will be to show, as far as is possible in the compass of a few pages, what the accounts really represent, and what is contained in the items therein specified. In the following chapter on "Life Assurance Book-keeping," an endeavour will be made to show how the various daily transactions are gathered up in the office books, and finally emerge in the desired form.

For the aid of those who desire a still more intimate and comprehensive knowledge of the subject a list of books and papers dealing with Life Assurance Accounts from one aspect or another is given at the end of Chapter XVI.

The two principal statutory forms of Account are set out in Appendix A of this book and are designated "First Schedule Form A," which is usually called the Revenue Account and "Third Schedule" or Balance Sheet. The Second Schedule or Profit and Loss Account would not, of course, be required by a purely mutual Life Company dividing all its profits amongst its policyholders, and in any case it is an exceedingly simple form of account.

FIRST SCHEDULE.

Form (A) Applicable to Life Assurance Business.

Revenue Account.

Note 1 states that companies having separate accounts for annuities are to return the particulars of their annuity business in a separate statement, whilst the note at the head of the account makes a similar demand in respect of capital redemption or sinking fund business.

A perusal of the accounts of leading insurance companies shows that practically all of them transact capital redemption business, but that comparatively few keep separate annuity accounts.

Note 2 makes it compulsory to return in a separate account particulars of any industrial business transacted.

Note 3 defines quite clearly that if any risks have been re-assured, the premiums paid in respect thereof, or any sum received thereunder, must be deducted, and net figures shown in the accounts.

Note 4 would mainly apply to a recently-formed company, where the initial expenses have, of course, been exceptionally heavy. In such a case the liquidation of the amount so expended is spread over a number of years. The balance outstanding will appear in the balance sheet as an asset, and it must also be shown in an inner column in the revenue account, only the amount written off for that year appearing in the total column.

Note 5 is relative to particulars required of the new business effected during the year. The information is more of a statistical character than a matter of accountancy.

It will be noticed that distinction has to be made between "business within the United Kingdom" and "business out of the United Kingdom." By Note 6 we are informed that where a company has its head office in the United Kingdom, "business *out of* the United Kingdom" is interpreted as meaning "business secured through branch offices or agencies out of the United Kingdom." It is very obvious that this definition does not satisfy every enquiry that may be raised as to the exact meaning of the note. Emphasis is laid on the source whence the business came, but it is manifest that very many changes may have occurred between the date of effecting an assurance and the time of its becoming a claim. The branch or agency may have been closed or the policy may have been transferred home for renewal. It is probable that companies generally treat this distinction on a somewhat broader basis than that actually laid down in the Act.

It has also to be remembered that in consequence of the altered status of Ireland, the term United Kingdom is really obsolete. At the same time the Board of Trade have so far reserved their opinion as to how business from Ireland is to be regarded. The point, however, will have to be settled in the near future: in the meantime the expression United Kingdom is still being used, and Irish business probably regarded as "within the United Kingdom."

Presumably, if revenue accounts are rendered for capital redemption and annuity business, they must be similarly divided if necessary.

It will be noticed that only certain specified items have to be so divided, and from the chapter on "Life Assurance Book-keeping," it will be seen that these requirements do not occasion any great difficulty in their treatment in the office books.

Having thus cleared the way we are now free to consider the Form more in detail.

In considering this account, the first question is: What does it represent? As the name indicates, it is a "revenue account," and not a cash statement of income and expenditure, as perhaps, at first sight, it rather appears to be. Dr. Sprague in his well-known book has likened the revenue account to what, in an ordinary commercial concern, would be the "trade account." That is to say, the figures in the revenue account should exactly represent on the one side all the moneys that have fallen due during the period of account, irrespective of whether they have actually been received or not, whilst on the other side should appear all payments that have fallen due during the period of account, irrespective of whether payment has been made or not. It will be noticed that the receipts are shown on the left hand side and the outgo on the right, whereas in the "trade" or "revenue" account of a commercial firm, the position is reversed and the figures are shown in the same manner as they appear in the office ledger, viz., the outgo on the left, and the receipts on the right.

The differences between the moneys due or owing and the cash actually received or paid appear in the balance sheet as "assets" or "liabilities" respectively; thus we have as an asset such items as:

Outstanding Premiums,
,, Interest, etc.,

and as a liability,

Claims admitted or intimated but not paid.

The amounts shown against these items will, in the main, be received or paid during the next year of account, but they must not again figure amongst the premiums, interest, or claims in the revenue account, as they have already been included in the figure with which that year's revenue account will be started, viz., "amount of life assurance fund at the beginning of the year."

From the revenue account it will be seen that every item of revenue due shown therein, increases the life assurance fund, and consequently, the assets, and that every item of outgo due decreases the life assurance fund and, therefore, the assets.

When therefore, the outstanding premium is received or the claim is paid, the amount must not again appear in the revenue account, or the life assurance fund would again be affected, since all that has happened is that the asset "outstanding premium" has become the asset "cash," or the liability "claim admitted or intimated but not paid" has disappeared by the reduction of the asset "cash." A transaction that merely changes the character of one asset into another, or reduces a liability and an asset by the same amount is obviously not an item of revenue, and cannot, therefore, appear in the account.

Some premiums, of course, will not be paid at all, and these will have to be written off, and the life assurance fund will be decreased accordingly, as what was regarded as an asset has turned out to be unrealizable.

Having thus seen that the figure with which the revenue account starts, viz., "amount of life assurance fund at the beginning of the year," includes all outstanding income and excludes all outstanding outgo of the preceding year, the various items can now be considered.

Income.

Premiums.—Under this head will be included, not only premiums due in the year of account, but any amounts that have been allowed by way of bonus reductions; that is, the sum by which a premium has been permanently or temporarily reduced by application of bonus, or where the profits have been anticipated and discounted and the premium reduced under a scheme known by some such title as the "discounted bonus plan." It will be seen that the total amount of such reductions is entered on the other side of the account.

Many offices allow one-quarter or one-third of the premium payable under certain classes of policies to be charged as a loan on the policy. The portion thus advanced will be included under "premiums." There will also be included premiums that have been advanced by the company under any of the various systems of nonforfeiture that are now in vogue. Amounts so advanced will appear in the balance sheet as loans on the company's policies.

As already stated, all reassurance items must be deducted.

Considerations for Annuities granted.—It has now become a practically established rule that under this head are included only such sums as are paid for the purchase of immediate or deferred annuities. Amounts received in respect of any class of contingent annuity are usually entered under premiums as, in the first instance, the contract may be regarded as a contingent life assurance. By contingent annuity is meant a contract to make "A" an annual payment during lifetime after the death of "B." Assuming "B" to die first the sum necessary to purchase the annuity payable to "A" should be charged to life "claims," and should appear amongst the "considerations for annuities granted," the annual payment thereafter coming in under the head of "annuities."

Interest, Dividends and Rents.—It is compulsory to show this figure, with tax deducted therefrom, the net amount being brought into the total column. Bearing in mind the remarks already made as to the inclusion of all items *due*, whether received or not, it seems not only legitimate, but correct, to bring in all interest, dividends, and rents accrued from the date of the last payment to the date of account, and this course is now almost universally adopted.

It does not, of course, follow that the amount of "rents" brought in will be the full sum that is actually due or has been received in this respect. There are numerous outgoings to be met on account of the property from which the rents are derived, and these should be allowed for, and only the surplus which really represents the yield on the investment brought to account.

In addition to the income derived from the ordinary interest-earning investments, there may be included under this head "interest on reversions purchased," and there will be deducted interest that is included in the purchase-price of Stock Exchange securities, and the annual amounts written off terminable securities, when they are redeemable at a price which is below the purchase price.

Other Receipts (accounts to be specified).—These are not very formidable, and consist almost entirely of transfer fees, and fees received for acknowledgment of notices of assignment. The latter are specified in most accounts as "registration fees," but as the statutory fee of 5s. can only be charged for the acknowledgment of a notice of assignment and not for mere registration, perhaps the more accurate description would be "acknowledgment fees."

Fines on Premiums is an item that appears in many accounts, being the amounts charged on premiums paid in arrear. Such amounts are frequently included under "interest, dividends and rents."

Any profit that has been made by the sale of investments is specified here. although such profit would possibly be set off against a depreciation in the value of some other asset, and, therefore, might not appear in the revenue account.

OUTGO.

Claims under Policies paid and outstanding.—It is usual to keep open the claims account for a reasonable period after the close of the financial year in order that time may be given for the intimation of all claims that have arisen during the year. The amount appearing under this head must include every claim that has been "*intimated*" to the company, quite irrespective of whether it has been paid or even admitted as a *bona fide* claim. The unpaid claims will appear in the balance sheet as the liability "Claims admitted or intimated but not paid." As will be seen, it is necessary to separate claims by death from claims by maturity.

Surrenders including surrenders of bonus.—This will include the cash value that has been allowed on surrenders of the sum assured under a policy and any bonus that may attach thereto, plus unclaimed surrender values on policies that have lapsed, the values thereof not being applied to keep them in force. The amount of the unclaimed values appears in the balance sheet as a liability, and is regarded as such for a definite period of years. At the expiration of that period, the liability would probably be written off, the amount being restored to the life assurance fund. To keep within the strict spirit of the account, it should include the cash value of surrenders that have been agreed to but where the cash has not actually been paid. Quite frequently, however, the latter item is not included on the grounds that until the cash has actually been handed over it is not certain that the transaction will be completed, notwithstanding the fact that a definite contract to surrender may have been made.

In addition thereto, loans on lapsed policies must be written off by charging the amounts to "surrenders." This will include the loans set up under a one-fourth or one-third credit system, or the charges created by the operation of a scheme of non-forfeiture.

Annuities.—This item represents the total amount of annuities *due* during the financial year, those unpaid appearing in the Balance Sheet as the liability "*Annuities due but unpaid.*"

In the majority of cases annuities are paid less income tax, but the amount shown in the Revenue Account will be the gross figure.

At the present time, arrangements can usually be made with the Authorities to make no deduction for tax in the case of a single person whose income does not exceed £135 or married persons whose joint income does not exceed £225, whilst in both cases only half the standard rate need be deducted if the income does not exceed £500.

It may perhaps be stated that the whole of the tax that has been deducted from annuity payments does not necessarily have to be handed over to the Revenue. As a rule a company is able to retain such an amount as is equal to the tax on the interest earned by its annuity fund. The following is an extract from a circular issued by the Inland Revenue entitled, "Circular to Secretaries of Life Insurance Companies paying Annuities," dated 6th December, 1918.

"A Company . . : . . . will be required, in the normal case
"where the gross interest of the Annuity Fund is less than the
"gross annuities paid, to account for the difference between the
"total tax deducted from the annuities and the tax paid by the
"company on the Annuity Fund interest."

Bonuses in Cash.—These are cash bonuses, or reversionary bonuses surrendered for cash, the sum assured remaining intact, and must be kept separate from surrenders of bonus where the sum assured is also surrendered.

Bonuses in reduction of Premium.—This item was dealt with when considering "premiums."

Commission.—As all premiums due are taken credit for, all commissions payable thereon should be included in this item, although probably this is by no means invariably done. The item should certainly, however, include all commission paid or payable on all premiums received during the year. Some companies, however, merely include an estimate of the amount of commission due but unpaid, the amount thereof appearing in the balance sheet as a liability. It is obviously incorrect to bring in only such commission as has been actually paid during the year. A distinct liability is thus ignored.

Expenses of Management.—This item will be of little trouble to the life department of a composite company worked on a fixed expense basis, such as a definite percentage of the premium income. For a purely life office it is a different matter. In addition to payments made, ample provision must be made for expenses incurred but outstanding, such liability appearing in the balance sheet under its appropriate head. Due regard must be paid to Note 4, which has already been commented on.

Many companies specifically divide both commission and expenses of management as between the life assurance and annuity business.

Other Payments (accounts to be specified).—Chief amongst other payments will probably be an item "dividends" or "share of profits to shareholders" or some similar entry, unless the office is purely mutual. Some of the various methods by which the figure is arrived at are referred to in dealing with the profit and loss account. So far as the accounts are concerned, it is merely a charge on the life assurance fund. The item may appear as a transfer to profit and loss account in the accounts of a proprietary life assurance company.

Amount of Life Assurance Fund at the end of the year as per Third Schedule.—All items of outgo having been brought to account, this will be the balance figure. The revenue account is completed, and its various items show how the fund at the beginning of the year has become changed to the fund at the end of the year, which, of course, is the amount stated in the balance sheet. This, too, is the starting figure for the next year's revenue account.

If separate accounts are kept for annuities, and capital redemption business is transacted, the revenue accounts are drawn up in a precisely similar way to Form A, which has just been discussed, and of course, the same principles apply. Unless separate assets are kept, the proportion of interest, dividends and rents that will be transferred in respect of the annuity and capital redemption funds must be decided upon. It will probably be assumed that the funds are earning the same rate of interest as the total life funds and an amount will be transferred from interest account calculated on this basis.

It is not necessary under Section 3 (1) to keep the investments of any such fund separate from the investments of any other fund. It seems a somewhat extraordinary legislative provision to prescribe separate funds, but not separate assets.

The items "consideration for annuities" and "annuities paid," appear sometimes in the revenue account of the capital redemption fund. They refer, of course, to annuities-certain, which are merely contracts to pay certain sums of money for a given time, such payment not being dependent on a life, and where no life risk is involved.

The item "expenses of management" in both accounts should be a fair proportion of the general expenses.

SECOND SCHEDULE.

The necessity for the second schedule, *Profit and Loss Account*, depends entirely on the character and constitution of the company. Offices, in the main, can be divided into three classes :—

Purely mutual offices, in which all profits are divisible amongst the policyholders, and which, therefore, will not require such an account.

Proprietary offices, transacting life business only in which the shareholders take a certain proportion of the life profits. In such a case the profit and loss account becomes practically a dividend account; that is, the interest on the shareholders' paid-up capital and the profit from the life business appear on one side of the account and the dividend to the shareholders on the other.

Most of the companies, however, come in the third category, namely, those transacting various classes of insurance business. In such cases the profit and loss account will gather up the profits from all departments of the company's business, the figures relative to the life business being only one item in the account.

Companies in the two latter classes have various methods of determining the amount that shall be paid to shareholders by way of profit from the life business. In one or two cases shareholders take all the profits derived from the non-profit business, the with-profit policyholders taking all the profits yielded by their section. It is on this account that entirely separate accounts are rendered by such offices in respect of the non-profit and with-profit business. This renders it necessary either to keep two sets of books, or to make a careful analysis of every account set up into the two sections.

In other cases a certain percentage of the premium income, or, more usually, of the profits divisible at the periodical valuations is paid to the shareholders.

THIRD SCHEDULE.

BALANCE SHEET.

The form of balance sheet is given in Appendix A of this book.

General Remarks.—A balance sheet is a statement of assets and liabilities—it is not an account. It must still be borne in mind that in the office ledger the balances that appear on the debit or left hand side of the book appear on the right hand side of the balance sheet and *vice versa*.

The notes to the balance sheet are important.

Note 1. The information desired is often incorporated in the certificate required under Notes 3 and 4.

Note 2. Although separate revenue accounts may be rendered for annuity and capital redemption business, unless specific assets are kept as against the respective funds, only one balance sheet is necessary. Companies keeping separate assets for participating and non-participating business, will render separate balance sheets; and, of course, where a company has absorbed a life office it will be necessary to render a separate balance sheet if separate assets are kept in respect thereof. By Note 4 the persons who sign the Balance Sheet as well as the auditor have to certify that no part of any fund has been applied directly or indirectly for any other purpose than the class of business to which it is applicable.

Note 3 is one of the most important features of the balance sheet and should provide a guarantee welcome to both shareholders and policyholders. The usual method of arriving at the value of Stock Exchange securities is to take the middle market price on the last day of the financial year, less accrued interest.

LIABILITIES.

Considering the balance sheet more in detail, the first item of liability is :—

Shareholders' Capital paid up (if any).—It is not necessary to state the amount of capital *subscribed*, although such information is very often given. It certainly appears to be desirable so to do, otherwise there is no visible means of ascertaining the unpaid liability existing on the stock or shares. In a mutual office this item, of course, disappears.

Many of the other items of liability have already been referred to; first in order comes the *Life Assurance Fund*, divided as between industrial and ordinary business, if the former class of assurance is transacted.

Annuity Fund.—This appears only in the event of a separate revenue account having been returned for annuity business.

Sinking or Capital Redemption) Fund.

Profit and Loss Account.—This item would appear only in the accounts of a proprietary life company or one transacting a general assurance business. It represents undistributed profits.

Other Funds (if any) to be specified.—If an investment reserve fund, to cover depreciation of assets, has been set up, it would be stated here.

The total of all these funds is brought in one item into the outer column.

Claims admitted or intimated but unpaid.

Annuities due and unpaid.—These items have both been referred to.

Other sums owing by the company (to be stated separately under each class of business).—Various liabilities are shown under this head, the principal being :—

- *Commission due but unpaid.*—As already stated this is a liability for which provision should certainly be made. Some companies make a deduction from agents' balances or outstanding premiums, which is legitimate but unsatisfactory, as it is impossible to tell from the balance sheet whether provision has been made or not.
- *Surrender values unclaimed or surrenders outstanding.*—This is for surrender values unclaimed and possible surrenders pending but not completed, as already mentioned.

Premiums paid in advance.

Reassurance premiums due but unpaid.

Interest received but not due.

Every company will have items that will fall under one or other of these heads. The reason why they do not appear more generally in the balance sheet, is that the amounts have been deducted from the respective assets, viz.: the first and second from outstanding premiums and the last from outstanding interest.

Sundry creditors (*or outstanding charges*) are often important liabilities, representing various items of miscellaneous expenditure due but unpaid, the balance of expenses of management account.

Bills Payable.—This item is not often seen in life office accounts. It represents bills that have been accepted but have not fallen due for payment.

Assets.

In comparison with the provisions of the 1870 Act, the Act of 1909 requires the assets of a company to be classified under a considerably extended number of heads, and it is impossible to deal with each of these separately within the compass of a single chapter. Consideration is, therefore, confined to some of the items that appear to call for special comment.

Mortgages and Loans.—The titles given to the two classes of " mortgages " and six classes of " loans " are sufficiently explicit to leave little doubt as to their meaning. " Loans on policies within their surrender value " may include advances under one-fourth or one-third credit policies. As, however, it is doubtful if for the first year or two such advances are strictly " within the surrender value," it might perhaps be better if they were shown under a separate distinctive heading. Premiums in arrear charged as a debt on the policy under a non-forfeiture system can be legitimately included in the former class.

Investments.—Stock Exchange securities have to be specified under eleven sub-headings. Even with this classification some companies seem to have a difficulty in satisfactorily dividing their securities under the heads given, as additional headings appear in the balance sheets, such as " Indian railway annuities and stocks," " foreign railway stocks," and " gas stocks," etc. The last item, "railway ordinary stocks," is generally altered to "railway and other ordinary stocks," but some companies adhere to the title as given, and include an additional class for " stocks and shares other than railway stocks."

Naturally the Board of Trade have no objection to an extension of the classification if, by so doing, the character of the investment is more accurately defined.

Deposit with the High Court (*securities to be specified*).—Under the 1909 Act every life assurance company has to keep deposited with the Paymaster-General, the sum of £20,000, to be invested in certain approved securities, such securities having to be specified, although it is not necessary to state the nominal value thereof. The Board of Trade do not concern themselves with any depreciation that may occur in the value of the approved securities with the result of bringing the market value below £20,000.

Rent Charges.—These are practically mortgages on land, and are usually repayable by half-yearly instalments, combining repayment of principal and interest on the portion outstanding.

Freehold and Leasehold Ground Rents.

House Property.—This may represent investments made in house property—probably the bulk of the sum represents the cost of the business premises purchased and occupied by the company.

Life Interests: Reversions.—These are purchases outright and perhaps some difficulty will be experienced in assigning an investment to its right class, as many transactions combine the purchase both of a life interest and of a contingent reversion. On the purchase of a life interest, the annual premium necessary to provide for the repayment of capital on the death of the life tenant must be paid out of the interest receivable from the corpus.

Reversions are dealt with in various ways:

(1) Debit no interest at all, but when the reversion falls in regard the difference between the purchase price and the amount received as *profit:* a somewhat unscientific method.

(2) Write up the book value of the reversion annually by an assumed rate of interest (sufficiently low to ensure that in normal circumstances there will, in addition, be a small profit shown at successive valuations).

(3) Purchase an annuity on the life of the life tenant of such an amount as will represent a fair yield on the sum invested, and add cost thereof to purchase price.

These alternatives were suggested by Dr. Sprague in in his book on accounts. It will hardly fall within the province of the accountant to decide which method is to be adopted.

Agents' Balances.—These represent the balances of the agents' accounts. In some cases the title is altered to "branch and agency balances," so as to include branch premiums outstanding.

Outstanding Premiums.—If the alteration just mentioned is made this item will then represent premiums renewable at head office due but unpaid. There does not seem to be any definite interpretation of these two items.

Outstanding Interest, Dividends and Rents.

Interest accrued but not payable.

Both of these items will be net of income tax, for only the amount that will actually be received can be regarded as an asset.

Bills Receivable.—These represent bills which have been accepted, but which have not matured.

Cash on Deposit.

Cash in Hand and on Current Account.

The former item is self-explanatory; the latter may include policy stamps, stamps on loan deeds, and, possibly, postage stamps in hand unless such are shown separately.

Other Assets to be specified.—If office furniture is regarded as an asset, it would appear here.

The outstanding balance of preliminary expenses (Note 4, Revenue Account) would also be shown here, but a study of life assurance accounts will show that few such items are mentioned.

It only remains to be added that if this chapter is read in conjunction with that on "Life Assurance Book-keeping," any points that are still obscure will probably be made clear by a perusal of the working of the various subsidiary accounts that lead up to the final figures in the Forms discussed herein.

Note.—A list of suggested reading appears at the end of Chapter xvi.

CHAPTER XVI.

LIFE ASSURANCE BOOK-KEEPING.

By A. G. Cudlipp.

Notwithstanding the apparently complex nature of the various suggested rulings and forms of account that are given at the end of this chapter, the book-keeping involved in life assurance accounts is, as a matter of fact, quite simple in character.

The purport of this chapter is not to explain the theory of book-keeping, but to show how the ordinary daily transactions of a life office are so recorded as finally to emerge as a revenue account and balance sheet set out in accordance with statutory regulations. It assumes therefore a knowledge of the general principles of double entry book-keeping.

The system outlined is not intended to apply to "industrial" business. The main principles would be the same, but the character of the subsidiary books would have to be altered to meet the peculiar characteristics of that class of business.

It may also be of interest to state that every principle that is introduced has been actually tried and tested by one company or another and has been found to be convenient and practical.

General Remarks.

The great majority of life assurance offices have now availed themselves of the undoubted advantages offered by the use of loose-leaf ledgers and cards. Their use should, however, be confined to subsidiary accounts, the accuracy and entirety of which can easily be checked from the general ledger, which would, of course, be of the ordinary type. In a large number of cases a handy sized loose-leaf ledger would suffice to contain the open accounts of several weighty mortgage ledgers in which the bulk of the contents is ancient history.

The chief advantages of cards in lieu of renewal registers are that policies can be kept in strict numerical order (which, owing to transfers, reinstatements, etc., would otherwise be impossible) and that cards relative to policies which for some reason have gone off the books can be removed and safely filed elsewhere.

It need hardly be said, however, that nothing of this character could be included in any proper system of book-keeping without such steps being taken as to ensure that, if a card or leaf were mislaid, the loss would be very speedily discovered.

The subsidiary books necessary for the recording of the daily transactions will, of course, vary in character and in number according to the area and magnitude of the company's operations. Those offices that confine themselves to business within Great Britain are relieved of many of the requirements necessary for the company that has foreign branches or agencies, and those that have neither home nor foreign branches or agents are in a still better position as regards the simplicity of their accounts. Whilst, however, these differences must inevitably occur, the three books necessary for double entry book-keeping are indispensable, viz.:

1. The general journal—for the transfer of entries from one account to another, not involving the passing of cash.
2. The general ledger—which contains all the accounts necessary for the drawing up of the revenue account and balance sheet.
3. The general cash book—for recording cash receipts and expenditure.

The form and working of the various subsidiary books referred to herein are such as would be necessary for a company having both home and foreign branches and agencies.

Before these books are considered in detail, it will be well thoroughly to grasp some general principles.

If the First and Third Schedules of the Assurance Companies Act, 1909, given in Appendix A, are referred to, it will be seen that the first and the last items in the First Schedule, usually known as the revenue account, give the amounts of the life assurance fund as at the beginning and the end of the year respectively. The last item, of course, also appears in the Third Schedule, the balance sheet.

The life assurance fund is to the assurance company what the capital account (so familiar in book-keeping exercises) is to the trading company. As was explained in Chapter XV., it represents the difference between the assets and liabilities.

If, therefore, the sole transactions of a company were that two premiums totalling £500 fell due, the revenue account would be:

Premiums	£500	Life Assurance Fund ...	£500

and the balance sheet

Life Assurance Fund	£500	Premiums Outstanding ...	£500

Assuming, however, that next day one premium of £250 has been received and one claim of £100 has been intimated, the position is:

REVENUE ACCOUNT.

Premiums	£500	Claims	£100
		Life Assurance Fund ...	£400
	£500		£500

and the

BALANCE SHEET.

Life Assurance Fund	£400	Premiums Outstanding	£250
Claims Outstanding	£100	Cash	£250
	£500		£500

It will at once be seen that the other forms of asset, mainly consisting of "*Interest and Dividends*", can be treated in a precisely similar way to "*Premiums*", and that a liability such as "*Surrenders*" is only another form of claim. It will be noticed that both in dealing with the asset "*Premiums*" and the liability "*Claims*", two accounts are affected in each case, namely, the account that simply records the fact that an asset or liability has been created and the account that records the actual realization thereof, thus:

On the premiums falling due.

Premiums Outstanding, *Dr.* £500.

Premiums *Cr.* £500.

On a claim being intimated.

Claims, *Dr.* £100.

Claims Outstanding, *Cr.* £100.

When the premium was paid the accounts would show:

Cash, *Dr.* £250.

Premiums Outstanding, *Cr.* £250.

The *General Journal* would be used for carrying through the first two items to the *General Ledger*, unless a subsidiary premium journal was used.

The *General Cash Book* would be used for the latter item as more fully explained later, so that the *General Ledger* would show the following accounts:

PREMIUMS ACCOUNT.

Balance transferred to Life Assurance Fund	£500	Premiums	£500

PREMIUMS OUTSTANDING ACCOUNT.

Premiums	£500	Cash	£250
		Balance carried down ...	£250

CLAIMS ACCOUNT.

Claims	£100	Balance transferred to Life Assurance Fund ...	£100

CLAIMS OUTSTANDING ACCOUNT.

Balance carried down	£100	Claims	£100

CASH OR BANK ACCOUNT.

Premiums Outstanding	£250	Balance carried down ...	£250

REVENUE ACCOUNT (LIFE ASSURANCE FUND).

Claims	£100	Premiums	£500
Balance carried down	£400		
	£500		£500

The balances of the "outstanding" accounts are, of course, all included in the balance sheet as already shown.

It will be noticed that in the *Ledger* account the items are on the reverse side to that on which they appear in the published statutory form of account.

Whilst, however, general principles have been discussed, a further perusal of the required rendering of the accounts will show that a considerable amount of analysis will be necessary if the books are readily to give all the information that is demanded. The items in the revenue account have to be divided accordingly as they relate to "business within" and "business out of" the *United Kingdom. A separate revenue account is also required for sinking fund or capital redemption business. Claims are required to be divided into "by death" and "by maturity." It is therefore necessary to columnize many of the ledger accounts, in the manner shown in the specimens at the end of this chapter.

The working of the general cash book will now be considered.

The General Cash Book.—There are two systems in vogue for treating the daily cash receipts and payments—

(1) which keeps receipts and payments entirely distinct (with the exception, perhaps, of petty cash). All moneys received are paid into the bank and consequently all payments are by cheque drawn for a specific purpose.

(2) which makes payments for one purpose from cash received for another purpose, *i.e.*, the cash received in respect of a premium might be at once handed over in settlement of a policy loan or a small surrender, and the daily balance paid into the bank—the correct accounts being debited and credited by a series of cross entries in the cash book.

Of the two the former is much to be preferred, both from the standpoint of practicability and also of correct accountancy. The general cash book, illustrated at the end of the chapter, is drawn up on this basis.

In a large office it might be desirable to have the cash book in two parts:

*See Chapter XV. with regard to the position of Ireland.

(1) For moneys paid into the bank.

(2) For moneys withdrawn from the bank.

More room is thus given for columnar dissection of the amounts received or paid. The two books, of course, correspond to the debit and credit sides respectively of a single book.

The columns are headed with the names of the general ledger accounts in respect of which cash is most frequently received or paid, and therefore on the debit (or cash received) side columns would be headed :

Head Office Premiums ...	For cash received in respect of Premiums payable at Head Office as per Head Office Cash Book (see specimen at end of chapter).
Branch Remittances ...	For cash received from Branches or on account of Premiums renewable through Branches.
Agents' Remittances ...	For cash received from Head Office Agents, as per Agents' Cash Book.
Considerations for Annuities	Purchase Money of Immediate Annuities when paid direct to Head Office or remitted from a Branch or Agent.
Sundries	Sundry Receipts.
Interest	Interest, Dividends and Rents received as per Interest Cash Book (see specimen at end of chapter).

The debit side of the general cash book would be written up day by day by the accountant from particulars supplied by the cashier who would enter the individual items he received in his subsidiary books, such as the head office cash book and interest cash book, and if necessary a book for branch or agents' remittances. The use of these subsidiary cash books is explained later.

"Bills receivable" and "Bills payable" do not enter very much into the transactions of the average life office but the general cash book should make provision for the few that do occasionally come along.

It will be noticed that on the debit side of the cash book a column is headed "Bills receivable." If, for example, a bill has been received, say from an agent, it will be entered in the agents' columns, and carried out into the bills receivable column —not in the cash or total columns as the bank will give no credit for it until it has been honoured.

On the credit side of the general cash book are the columns headed with the accounts in respect of which payments are most frequently made. As these payments will all be made by cheque, it may be found convenient to enter up the cheques drawn in numerical order. It will thus be necessary to keep a record of the outstanding cheques in order that an agreement may be made between the balance as shown by the bank pass book and the cash book.

At the end of the month the sundries column, containing the items of too varied and infrequent a character to warrant an individual column, and the interest, etc., column, will be analysed into their correct ledger accounts; the other columns will be totalled and the whole summarized.

There will thus be a complete analysis and summary of all the receipts and payments during the month, ready for posting in the general ledger, viz. for all receipts:

Bank }
Bills Receivable } *Dr.*
Various Accounts, *Cr.*

and for all payments:

Various Accounts, *Dr.*
Bank, *Cr.*

This posting can be done direct from the cash book summary.

When the bill is honoured and the amount appears in the pass book, it will be entered in the cash book to bills receivable, and the amount carried into the sundries, cash and total columns. At the end of the month the summary will then show:

Bank, *Dr.*
Bills Receivable, *Cr.*

Whilst cheques for large amounts are usually signed by directors at their regular meeting, it is usually the custom for certain members of the management to sign cheques for say £100 or under. A separate bank account is usually opened, fed of course periodically by transfer from the main banking account and cheques are drawn on this subsidiary account.

A manager's cash book is therefore necessary, suitably columnized, periodically analyzed and posted to the proper ledger accounts as in the case of the general cash book. The cashier will, of course, require his petty cash book, which again is on very similar lines and needs little explanation. Cheques will be drawn in convenient sums as required, and the amounts passed through the general cash book to the debit of petty cash account. The amount so received will be entered in the petty cash book, and will be available for petty disbursements.

The account may also be fed from outside sources, such as the fees received for acknowledgment of notices of assignment and possibly the amounts received for stamp duty on policy loan deeds, especially if the latter are paid out of petty cash.

It will be sufficient if this book is analyzed and summarized quarterly, and the postings made to the general ledger.

Petty Cash, *Dr.*
Various Accounts, *Cr.*

for sums received during the quarter.

Various Accounts, *Dr.*
Petty Cash, *Cr.*

for petty disbursements during the quarter.

It is now possible to trace the various items of income and outgo through the books in detail.

Dealing first with *Premiums*—it is usual to keep the first premium on a newly granted policy separate from renewal premiums and it will therefore be necessary to have a *New Premium Register*. A suggested form of new premium register is given at the end of this chapter. As will be seen it is arranged both for life and capital redemption, home and foreign (that is within and out of the United Kingdom) and for the various departments through which premiums are received.

Every policy issued is entered in numerical order, and the premium inserted in its correct column and carried out into the "total" column. The name of the branch or agency to be debited therewith is also inserted. The columns are all cast monthly.

There will be subsidiary ledgers containing accounts for every branch or agency, and the respective accounts will be debited with the items entered up against them in the register.

Renewal Premiums.—A card index is far more advantageous than a book register when dealing with renewals. For each policy renewable by payment of periodical premiums a card will be written containing particulars somewhat as follows:

Differently coloured cards to be used for each renewal month. An error in collating the cards would thus be detected at once.	Department	Head Office.	Head Office, Branch or Agency.
	Policy No.	123456.	
	Renewable on ...	1st August.	
	Sum Assured £1,500	Premium £60.	
	Life Assured ...	A. B. C.	
	Rate of Commission	2½%.	
	Agency	Clapham.	
	Agent	D. E. F.	
	Class of Policy ...	Whole-Life Non-profit.	Life or Capital Redemption.
	Last Premium due ...		

These cards are sorted according to the month in which they are due, and the department through which each policy is renewable, so that, *e.g.*, the Edinburgh branch, August renewal cards are all contained in a drawer in strict numerical order, except that policies in respect of capital redemption insurances would be filed at the end of each section for convenience. From these cards, by the use of the modern typewriter, there can be produced at one and the same time:

(1) Head Office... ... ... Renewal Notices.
Receipts and Counterfoils.
List of Premiums in duplicate.

(2) Branches—Home and Foreign	...	Renewal Notices. Receipts and Counterfoils. List of Premiums in duplicate.
(3) Agents—Home and Foreign	...	Renewal Notices. Receipts and Counterfoils. Account or Invoice in duplicate.

This will, of course, be done monthly, the list of premiums (head office and branches) cast with a separate total for capital redemption premiums, and the totals carried into the renewal premiums debit journal (as shown at the end of this chapter) together with the totals of the individual agents' accounts. Individual accounts in the branch and agency ledgers will be debited with their respective items. (Wherever the branch or agents' ledgers are mentioned, the reference is to the ledgers kept by the head office containing the individual branch or agent's account, and not to ledgers that may be kept by a branch or an agent.)

The debit journal will be cast, the totals from the new premium register incorporated, and the entire premium income for the month carried direct to the respective general ledger accounts, the entry being:

Sundries, *Dr.*
Premiums, *Cr.* ... ... £1,979 3*s.* 3*d.*

Debit.	Life. £	*s.*	*d.*	Cap. Redn. £	*s.*	*d.*	
Head Office Premium A/c.	1,020	10	6	63	3	3	(See specimen rulings at end of chapter.)
Branches—Home ...	697	3	4	107	15	0	
Foreign ...	36	0	0	...			
Agents—Home ...	20	19	3	1	3	5	
Foreign ...	...			32	8	6	
	1,774	13	1	204	10	2	

This corresponds to the following entry already referred to.

Premiums Outstanding Account, *Dr.*
(subdivided as above.)
Premiums, *Cr.*

There is now the entry:

Bank, *Dr.*
Premiums Outstanding, *Cr.*
(subdivided as above.)

to be worked through.

Premiums payable at the head office will be received by the cashier, and entered into his head office cash book, the daily cash total of which is entered in the general cash book in the column "head office premiums." Thus, through the summary at the end of the month the entry is obtained:

Bank, *Dr.*
Head Office Premiums, *Cr.*

A specimen of the head office cash book is given at the end of this chapter.

From many of the premiums paid, commission will have been deducted and therefore head office premiums will require to be credited with these deductions in order to obtain a correct balance of outstanding premiums.

It will be well therefore at this point to deal with the question of commission that is payable to those agents who are referred to herein as cash agents, *i.e.* those who do not have monthly or quarterly accounts with the company. It is very essential that commission transactions should be carefully and completely recorded, and it is therefore inevitable that the work involved therein will be rather considerable.

Two points must be kept in mind in considering the system that is to be employed, *i.e.*:

1. The general ledger accounts should show at any time the amount of commission payable, the amount that has been actually paid and the amount that is outstanding as a liability.
2. It should be possible at any time readily to ascertain what commission, if any, is due to any individual cash agent.

It will therefore be necessary to open commission accounts in the general ledger and also to have a subsidiary commission ledger (either in loose leaf or card form) in which individual accounts will be opened for each cash agent. From the head office cash book entries will be made in the "commission payable" column in a commission register (see specimen at end) of all commission payable on the premiums received (the counterfoils of the receipts giving the necessary particulars) and from thence the individual cash agents will be credited with the amounts due to them.

The monthly total of commission payable will be journalized :

Commission, *Dr.*
Commission Outstanding, *Cr.*

Turning now to the recording and accounting of the commissions actually paid, the various items will, of course, be paid either :

By deduction when remitting the premium.
By cheque through the general or management cash book.
By petty cash through the petty cash book.

If commission has been deducted the amount will simply be entered in the "commission deducted" column, the agent both credited and debited at the same time and the monthly total journalized :

Commission Outstanding, *Dr.*
Head Office Premiums, *Cr.*

As regards agents who have cash or cheque sent to them in payment of commission due, the procedure is the same whether the amount is in respect of one policy or of several. With the remittance is sent a form of receipt incorporating details of the remittance, in fact it is also a form of account. These receipt-accounts are prepared in duplicate, one being sent to the agent and the other filed by the office. The total of the account is entered in the section of the commission register headed " commission paid," but the details are used for posting up the agents' commission account—see specimen.

The amounts so paid will, of course, go to the debit of "commission outstanding" in the general ledger account through the cash book monthly summaries.

It must be remembered, however, that even when branch and agency commission has been dealt with, the amount standing to the debit of commission account will be only the amount payable in respect of premiums actually paid. To obtain a true revenue figure, commission must also be debited with the amount payable on premiums *due* but unpaid, and in order to avoid unduly complicating matters the amount will probably be estimated and the entry made:

Commission, *Dr.*
Commission Outstanding, *Cr.*

The closing entry dealing with commission will be:

Sundries, *Dr.*
(as specified below.)

Commission, *Cr.*
Life Assurance Fund.
Capital Redemption Fund.

The " head office premiums " account in the general ledger will therefore be:

Dr.	*Cr.*
Balance from last year (outstanding premiums).	Cash.
New Premiums.	Commission deducted.
Renewal Premiums.	Balance carried down.

Balance = Outstanding Premiums.

There will, also, probably be a credit item in respect of unpaid premiums and a debit item in respect of sundry extra premiums, as follows:

During the year certain of the premiums debited in the various accounts will require to be credited owing to claims, surrenders and non-renewals and sundry additional extra premiums (for residence, occupation etc.) charged will have to be debited.

To effect this a " sundry debits and credits " journal will be required. The book will be suitably ruled and sectioned for head office, branches and agencies, and entries made accordingly. Totals will be cast quarterly, and the entry made:

Premiums Adjustment Account, *Dr.*
Sundries, *Cr.*
(as specified below.)
Head Office Premium Account.
Branch ,,
Agents' ,,

for the premiums credited, and a reverse entry for any additional debits there may be.

At the close of the year the balance of "premiums adjustment" account will be debited or credited to "premiums" account accordingly as the balance stands. Individual branch or agent's accounts will also be debited or credited from the debits and credits journal.

Branches: Home.—It is quite impossible in the space allotted to this article to give any detailed description of the books kept by a branch, as they depend entirely on the magnitude and character thereof. Probably, however, the great majority of branches do little else but act as premium collectors for the policies renewable in their district. Claims, surrenders etc., are all paid by the head office. In this event a branch is simply a large agency for book-keeping purposes.

It has been shown how the premium for which the branch is responsible is debited to it, and how in the general cash book provision is made for recording the remittances that will be made periodically to head office. All that will be required, therefore, is for the branch to render periodically a statement somewhat in this form:

Balance from last account		Cash sent to Head Office...	
Premiums debited to us		Expenses paid	
Commission payable on premiums received ...		Commission allowed or paid by us	
		Balance	
		Commission outstanding	
		Premiums outstanding ...	
		Cash in hand	

The figures for "Commission" and "Expenses" would be journalized and carried to their correct accounts in the general ledger, "Premiums" and "Cash" having already been dealt with through the premium debit journal and general cash book respectively.

Agents: Home.—Agents' remittances are received every day. If they are sufficiently numerous they will be entered in an agents' cash book, and the daily total transferred to the general cash book, or, if few in number, entered individually therein in the column headed "agents' remittances." Thence the items will be credited to the proper accounts in the agents' ledger. If commission has been deducted the amount will be shown in the ledger, and if not, the agent will be credited with it. Some offices, just before the close of the year, send all agents (both account and cash agents), a remittance for any balance that stands to their credit.

Every quarter the totals of the accounts will be summarized and the "Commission" and "Expenses" journalized in the same manner as for branches.

A "returned receipts" register is often kept for branches and agencies. When a receipt is returned after the expiration of the days of grace (the premium not having been paid) the amount of the premium is entered herein, and the branch or agency at once credited. These returns are periodically cast and journalized:

Suspense Account, *Dr.*
Sundries, *Cr.*
(as specified below.)
Branches.
Agents.

Eventually the premium is either dealt with under some scheme of non-forfeiture and the entry is made:

Advances on Non-forfeiture, *Dr.*
Suspense Account, *Cr.*

or it is dealt with in some other way, *e.g.* written off or paid with interest or fine.

The object of this treatment is to clear an agent's account up promptly and not show a balance against him, for which, having returned the receipt, he is not liable.

The book-keeping for foreign branches and agents will be on a similar principle. Some companies, however, treat their, foreign branches as a practically separate concern. Every phase of the business is dealt with abroad, the acceptance of risks, payment of claims and investment of funds. In such cases the audited accounts are merely incorporated with the home accounts.

Whilst the various "premium outstanding" accounts have been worked through and the balances thereof made ready to be brought down to the balance sheet, the balance of the "premiums" account is not quite ready for transfer to the "life assurance fund" account.

First: Reassurances must be deducted.

Second: Bonuses allowed in reduction of premium must be added.

The book-keeping is quite simple. A reassurance register will be kept giving particulars of all reassurances payable. The monthly totals will be journalized:

Premiums, *Dr.*
Reassurance Premiums, *Cr.*

When payment is made the debit will come through the cash book summary:

Reassurance Premiums, *Dr.*
Bank, *Cr.*

Commission and any proportion of the policy stamp deducted must be journalized:

Reassurance Premiums, *Dr.*
Sundries, *Cr.*
(as specified below.)
Commission.
Policy Stamps.

Any balance of "reassurance premiums" account is a liability and must appear as such in the balance sheet, or else be deducted from "outstanding premiums."

Bonuses in reduction of premiums (see also Chapter XV.)—A register of these will be kept and a journal entry made at the close of the year:

Bonuses in reduction of Premiums, *Dr.*
Premiums, *Cr.*

The premium account is now complete and the balance will be transferred to the life and capital redemption funds.

PREMIUMS ACCOUNT (columnized as shewn in specimen at end of chapter.)

Reassurances.	Premiums due for year.
Premium Adjstmt. Account (Credits.)	Premium Adjstmt. Account (Debits.)
Balance to	Bonuses in reduction of premiums.
Life Assurance Fund.	
Capital Redemption Fund.	

Interest, Dividends and Rents.—The various sources from which this item is derived are specified in the chapter on "Life Assurance Accounts" and need not be repeated here.

The book-keeping involved is on the same principle as that laid down for premiums, and the entries will therefore resolve themselves into:

Sundries, *Dr.*
(as specified below.)

Interest, Dividends and Rents.	Gross, *Cr.*
Various "Interest Outstanding" Accounts	Net.
Income Tax.	

For convenience the "interest outstanding" accounts will be divided and represented by:

(1) Interest on loans on company's policies.

(2) Interest and dividends on Stock Exchange securities.

(3) Interest on mortgages, etc.

(4) Rents, etc.

Dealing first with interest on policy loans, the sums lent on security of a company's own life policies probably total to a very considerable amount. The average amount of each individual loan is, however, comparatively small. There will, therefore, be a considerable number of accounts set up and their treatment is worthy of special consideration.

The frequency with which policy loans are made and repaid renders the use of cards or loose-leaf ledgers very desirable, as otherwise the loan ledgers will soon be filled up—mainly with closed accounts.

A specimen card ledger account is given at the end of this chapter and is self-explanatory.

Some companies collect the interest on loans together with the renewal premiums. Such a course, though desirable for many reasons, has its objections ; an agent is thereby acquainted with the details of an assured's loan transactions, and moreover, the double payment might well be financially inconvenient to the borrower.

A better plan is to make all amounts of interest fall due on the same dates. If 1st April and 1st October are selected, the amount outstanding at the end of the year should be quite small

Notice, receipt and list will be typed as for premiums. The totals of the list (gross, tax, net) will be journalized as shown hereafter.

Stock Exchange Securities.—A special ledger, preferably loose-leaf, will be required for these investments, sectioned off into the various headings specified for this class of security in the balance sheet. Accounts will be opened as purchases are made and inserted in alphabetical order in their proper section.

Mortgages, etc.—The style of ledger and method of arrangement for these must obviously depend on the extent and character of the investments, but the mode of dealing with interest on these and on Stock Exchange securities will, broadly speaking, be as follows :

The interest falling due will be debited to each individual account towards the end of the preceding month—gross, tax, net. These three amounts will be transferred to an interest register and debited therein according to the class of security. The various items will be cast, and a monthly journal entry made as shown.

"Interest on loans on company's policies" will, of course, only be a half-yearly entry in April and October, the totals being obtained from the typed lists referred to above:

Sundries, *Dr.*

INTEREST, DIVIDENDS AND RENTS. *Cr.* £2,650.

Account to be debited, net.	Gross.			Tax.			Net.		
	£	s.	d.	£	s.	d.	£	s.	d.
Interest on Loans on Company's Policies ...	1,500	0	0	375	0	0	1,125	0	0
Interest and Dividends on Stock Exchange Securities	450	0	0	...			450	0	0
Interest on Mortgages, etc.	200	0	0	50	0	0	150	0	0
Rents, etc.	500	0	0	125	0	0	375	0	0
	2,650	0	0	550	0	0	2,100	0	0
Income Tax (total tax deducted)							550	0	0
							2,650	0	0

As a rule the interest will be received less income tax, and passed through the interest cash book (see specimen at end) the daily total going through the general cash book in the "interest cash book" column, and thus the general ledger "outstanding" accounts will receive their credits from the cash book monthly summary.

The individual cards and ledger accounts will be posted from the interest cash book.

Each "interest outstanding" account will therefore be:

Balance brought down.	Interest paid, less tax.*
Interest due, less tax.*	Balance carried forward.

Balance = Interest due, but unpaid, less tax.*

Interest accrued but not payable.—This item is required to complete the "interest, dividends and rents" accounts. Where possible, accrued interest (that is, in respect of each security, interest calculated from the last date on which it was due up to the date of closing the books) should be inserted in each individual ledger account and this is provided for on the policy loan cards. At the close of the year it is then only a matter of adding these amounts up. Where loans are repayable by half-yearly or annual instalments, however, this cannot be done so conveniently, as the accrued interest would only apply for one year. In such cases the interest will have to be worked out each year. The total of all accrued interest is journalized:

Sundries, *Dr.*
(as specified below.)
Interest, Dividends and Rents, *Cr.*
Interest accrued, net.
Income Tax.

(This entry is written back at the beginning of the next year.)

* Except, of course, in cases where tax is not deductible, such as loans to residents abroad.

Sundry other items will, of course, have to be carried to the credit of "interest" account, such as interest on bank deposits, interest on non-forfeiture charges and, on the other side of the account, there may be items of accrued interest on Stock Exchange purchases, viz. interest from the last interest or dividend date to the date of purchase which, with the exception of National War Bonds and certain other securities, is included in the price paid for the stock. Similarly, if stock is sold, interest account must be credited with the interest that has accrued.

There will also be a debit for the writing-down of terminable Stock Exchange securities should the purchase price be in excess of the amount payable on redemption. The difference between the purchase price of a security and the price at which it will be redeemed, either by drawings or maturity, is liquidated by annual writing-down, the entry being:

Interest, Dividends and Rents, *Dr.*
"Principal" Account (say)—
Indian and Colonial Government Securities, *Cr.*

With all such items brought in, the "interest, dividends and rents" account will be:

Accrued interest written back gross from last Account. Sundry items. Balance to— Life Assurance Fund. Capital Redemption Fund. Annuity Fund (in correct proportions).*	Interest from all sources (gross). Accrued interest (gross). Sundry items.

The balance of income tax account must be transferred:

Sundries, *Dr.*
(as specified below.)
Income Tax, *Cr.*
Life Assurance Fund.
Capital Redemption Fund.
Annuity Fund.

Income tax will not appear as an item of outgo in the revenue account, but the amount will be deducted from the gross interest, viz.:

Interest, Dividends and Rents.
less Income Tax.

Other Receipts (accounts to be specified).—Fees for acknowledgment of Notices of Assignment will be the principal item. The amounts will come through the petty cash summary quarterly, to the credit of the general ledger account, and the balance of the account will be transferred to the life assurance fund at the close of the year.

*See Chapter XV. regarding the allocation of Interest between the three funds.

Fines on premiums will come through the general cash book and thence as above.

Turning to the credit side of the revenue account, the first item is:

Claims under Policies Paid and Outstanding which are divided into: By death or maturity, within and out of the United Kingdom.

A claims register will be required and a specimen ruling is given at the end of the chapter.

Every claim will be entered therein as intimated and the amount placed in its right column or section. It will be seen that capital redemption maturities are also included.

The totals of the claims register will be journalized annually:

Claims Account, *Dr.*
Various "Claims Outstanding" Accounts, *Cr.*

the latter being represented by:

Claims General Account.
Endowments matured.
Capital Redemption maturities.

As claims are paid the amounts will come through the general cash book summary to the debit of the three outstanding accounts. The total of the balances thereof will be the balance sheet item "Claims admitted or intimated but not paid." Moneys received in respect of claims reassured will come through the cash book summary to the credit of "claims account." The balance of claims account will be transferred:

Sundries, *Dr.*
(as specified below.)
Claims Account, *Cr.*
Life Assurance Fund.
Capital Redemption Fund.

Surrenders.—These will be treated exactly as in "claims" if the item is dealt with on a true revenue basis (see Chapter XV). If, however, only the surrenders actually paid are brought into account, only one general ledger account is needed, viz. "surrenders." The cash paid will come through the cash book summary to the debit of the account and reassurances received to the credit. The balance will be journalized:

Sundries, *Dr.*
(as specified below.)
Surrenders, *Cr.*
Life Assurance Fund.
Capital Redemption Fund.

If surrenders are treated on a revenue basis, the balance of the outstanding account will appear in the balance sheet as the liability "Outstanding Surrenders" or "Unclaimed Surrender Values."

Bonuses in Cash will be a cash item only. The amounts paid will come through the cash book to the debit of "bonuses paid in cash" account, and the balance thereof transferred to the life assurance fund. The capital redemption fund is not, of course, concerned.

Bonuses in reduction of premium and *Commission*, on a true revenue basis, have been dealt with already.

Expenses of Management.—This should be a true revenue figure although, up to a point, expenses will be treated in the books more on a cash basis. Cash paid will come through to the debit of "expenses of management" account. Policy stamps, law charges, medical fees etc., are all expenses of management. Separate general ledger accounts will probably be opened for each of these and the totals transferred to the "expenses of management" account annually. At the end of the year the actual or estimated amount of unpaid expenses will also be debited thereto, and "sundry outstanding accounts" credited, the latter being a balance-sheet liability. The amount will be written back to the credit of "expenses of management" account at the commencement of the new account. "Expenses of management" account will be then transferred in correct proportions to the debit of the life assurance, capital redemption and annuity funds.

Other payments (accounts to be specified) are not likely to entail any book-keeping difficulties.

The life assurance and capital redemption fund accounts can now be balanced, the result being "the amount of funds at the end of the year," and the balances thus brought down will be the starting figures for next year's accounts.

Annuity Fund Revenue Account.

If the principles already laid down are understood, the book-keeping involved by the transaction of annuity business hardly needs any explanation. It has been assumed in the foregoing that a separate revenue account is rendered, although, as a matter of fact, few companies do so. In either event the book-keeping is exceedingly simple. The items "interest" and "expenses" have already been apportioned, and carried to the various funds.

The purchase-money for annuities will come through the cash book or through the branch summary book to the credit of "consideration for annuities granted" account. The balance of this account will be transferred to the credit of "annuity fund" account at the close of the year.

A register of all annuities payable will be kept and the monthly or quarterly totals journalized :—

Annuities, *Dr.*
    Sundries, *Cr.*
Annuities Outstanding.
Income Tax (in respect of such annuities as are payable net).

As the payments are made the outstanding account will be debited through the cash book summary.

The balance of the "outstanding" account will be the balance sheet liability "annuities due but unpaid."

If the income tax deducted can be retained, the income tax account is, of course, relieved to that extent. (See Chapter XV). When the balance of "interest" account is apportioned between the three funds, the balance of "income tax" account must also be carefully apportioned.

If there are any surrenders of annuities, they will be dealt with on the same basis as surrenders of life policies.

Commission.—Any commission payable should be paid on completion of the purchase. There is usually no question of renewal commission and there is no need, therefore, to have any outstanding annuity commission. The book-keeping is thus quite simple.

The general ledger "commission" account will be columnized into life, capital redemption, and annuity commissions, and into "within" and "out of," so that the transfer to the respective funds and the necessary division therein are easily effected.

Profit and Loss Account.

This is practically made up by annual transfers from other accounts. For instance, in a proprietary life company a proportion of the balance of "interest" account representing interest on the shareholders' paid-up capital will be transferred to this account, or in a composite company a certain portion of the life profits will be debited to the "life assurance fund" account and credited to "profit and loss." Dividends paid will go to the debit of the account. A portion of "expenses of management" account may also be transferred.

Conclusion.

With the aid of the various specimen accounts and rulings appended hereto, it is hoped that the way (or, perhaps, one way) in which all the items of revenue income and outgo and cash receipts and expenditure are carried through the books of a life assurance company, and finally emerge into the revenue account, will be clearly understood.

Many of the items appearing in the balance sheet have also been dealt with; the other items are simply the balances of investment accounts. Transactions as between asset and asset, such as sale of one security and purchase of another, only involve book-keeping of the most elementary order and therefore require no further description.

LIST OF READING FOR THE USE OF ACTUARIAL AND OTHER STUDENTS WHO DESIRE TO PURSUE THE SUBJECT.

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Life Premium Book-keeping, J. Chatham.—Vol. xxxviii., p. 619. (April, 1904.)

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Book-keeping, S. E. Macnaghten.—Vol. i., No. 1. (April, 1911.)

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GENERAL CASH BOOK.

Debit (or Receipts) side.

Date.	Account to be Credited.	Fo.	Head Office Premiums.	Branch Remittances.	Agents' Remittances.	Consideration for Annuities.	Sundries.	Interest.	Paid into Bank. Bills.	Paid into Bank. Cash.	Total
			£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.
1922. Oct. 31	Brought forward	Subsidiary Ledger Accounts.	1,069 0 1	5,600 0 0	783 2 0	2,500 0 0	18 6 7	2,930 8 5	..	12,900 17 1	12,900 17 1
	Head Office Premiums ..		122 2 1	..	..	..	..	..	..	122 2 1	..
	Branches—Birmingham ..		..	100 0 0	..	..	..	..	..	100 0 0	..
	Agents—Foreign		..	..	..	..	..	..	..	..	..
	Capetown—Smith.. ..		..	..	10 8 6	..	..	..	10 8 6	..	..
	Interest, Dividends etc., Cash Book..		..	..	..	..	..	1,591 6 6	..	1,591 6 6	1,813 8 7
			1,191 2 2	5,700 0 0	793 10 6	2,500 0 0	18 6 7	4,521 14 11	10 8 6	14,714 5 8	14,714 5 8
							To be analyzed.	Analyzed in Interest Cash Book.			This amount would be increased by any Balance brought forward from last month.
			Various Accounts, *Cr.*						Bills Rec'ble. and Bank, *Dr.*		

Credit (or Payments) side.

Date.	Account to be Debited.	Cheq. No.	Claims. Death.	Claims. Maturity.	Claims. Cap. Redn.	Surrenders. Life.	Surrenders. Cap. Redn.	Loans on Policies.	Annuities.	Commission. Life.	Commission. Cap. Redn.	Commission. Annuity.	Sundries.	Total.
			£ s. d.	£ s. d.	£ s. d.	£ s. d	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d	£ s. d.	£ s. d.
1922. Oct. 31	Brought forward ..		3,000 0 0	..	200 0 0	23 10 0	..	1,600 0 0	264 10 0	50 10 0	2 3 6	23 5 0	369 3 5	5,533 1 11
	Endowment Matured—12509 Wilkins, 'Home'	263	..	500 0 0	..	..	..	..	..	..	..	..	..	500 0 0
"	Surrender—32601 Smart, 'Foreign'	264	..	..	..	20 6 0	..	..	..	..	..	..	..	20 6 0
"	Loans on Policies—30400 Williams ..	265	..	..	..	..	..	10 0 0	..	..	..	..	..	10 0 0
"	Re-assur. Premiums—36189 .. £130 0 0 Commission 3 5 0	266	..	..	..	..	..	..	..	..	..	..	126 15 0	126 15 0
			3,000 0 0	500 0 0	200 0 0	43 16 0	..	1,610 0 0	264 10 0	50 10 0	2 3 6	23 5 0	495 18 5	6,190 2 11
	Balance carried forward		..	..	..	..	..	..	..	..	..	..	To be analysed.	8,524 2 9
			Various Accounts, *Dr.*											14,714 5 8

Bank, *Cr.*

LOANS ON POLICIES.—*Individual Accounts on cards.*

Loan No. 389. Rate of Interest 5 %
Policy 23465. Sum Assured £500.
Life Assured Own Life

Borrower, A. B. Cee.
Address

Date.		Fo.	Gross less Tax.	Net.	Principal.	Date.		Fo.	Net.	Principal.	Total Loan.	Accrued Interest.
			£ s. d.	£ s. d.	£ s. d.				£ s. d.	£ s. d.	£ s. d.	£ s. d.
1922. April 1	To Cash	General Cash Book.	..	..	120 0 0	1922. Oct. 11	By Cash	Interest Cash Book.	2 5 0	..	120 0 0	1 10 0
Oct. 1	Half-Year £120 0 0		3 0 0	..	..							0 7 6
			0 15 0	..	..							
				2 5 0								1 2 6

INTEREST CASH BOOK.—DEBIT SIDE.

Date.	Name.	Fo.	Policy Loans. Interest.	Policy Loans. Principal.	Mortgages, etc. Interest.	Mortgages, etc. Principal.	Sundries. Interest.	Sundries. Principal.	Interest and Dividends on Stocks.	Total.
			£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.
1922.	Brought forward		323 10 8	500 0 0	269 3 0	1,000 0 0	277 11 5	..	560 3 4	2,930 8 5
Oct. 31	A. B. Cee		2 5 0	..	..	..	..	..	..	2 5 0
,,	Bank of England Stock		..	..	..	..	..	..	450 0 0	450 0 0
,,	Sidney Street Warehouse Co. ..		..	..	188 6 8	500 0 0	..	..	..	688 6 8
,,	Park Lane Estate		..	..	..	..	450 3 4	..	..	450 3 4
			325 15 8	500 0 0	457 9 8	1,500 0 0	727 14 9	..	1,010 3 4	4,521 3 5
Analysis for transfer to General Cash Book.	Interest on Policy Loans ..	..	325 15 8	..	..	..	..	..	..	..
	Advances on Policy Loans ..	..	..	500 0 0	..	..	..	..	..	..
	Etc., etc.	..	..	..	..	..	..	..	..	..
			..	..	..	..	..	..	..	4,521 3 5

Date.	How Paid.	Cash.	Total.
		£ s. d.	£ s. d.
1922.	Brought forward	..	2,930 8 5
Oct. 31.	Cash	2 5 0	..
,,	Dividend Warrant C18634	450 0 0	..
	Cheque—S. St. Whse Co. on Barclays, Lombard St. ..	688 6 8	
	,, Pk. Lane Est. on Lloyds, Cornhill	450 3 4	
			1,590 15 0
			4,521 3 5

PREMIUMS ACCOUNT—GENERAL LEDGER.

Date.		Within. Life.	Within. Cap. Redn.	Out of. Life.	Out of. Cap. Redn.	Total.	Date.		Within. Life.	Within. Cap. Redn.	Out of. Life.	Out of. Cap. Redn.	Total.
		£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.			£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.
1922. Dec. 30	Re-assurance Premiums	..	..	..	..	..	1922. Oct. 30	Sundries	1,738 13 1	172 1 8	36 0 0	32 8 6	1,979 3 3
	Premiums Adjstmt. A/c.	..	..	..	..	..	..	from Renl. Prem. Debit Jourl., etc.	..	..	..	..	..
	Balance to Life Assurance Fund	..	..	..	..	..	..	Bonuses in Redn. of Premiums ..	..	..	..	..	..
	Capital Redn. Fund	..	..	..	..	..	..						

HEAD OFFICE PREMIUMS CASH BOOK.

Date.	Life Assured.	Policy.	Due.	Premiums Due. New.	Premiums Due. September.	Premiums Due. October.	Total.	Date.	How Paid.	Commission. Life.	Commission. Cap. Redn.	Cash.	Total.
				£ s. d.	£ s. d.	£ s. d.	£ s. d.			£ s. d.	£ s. d.	£ s. d.	£ s. d.
1922. Oct. 31	S. Lloyd ..	21303	Oct. ..	..	..	35 10 0	..	1922. Oct 31	S. Lloyd, on Parrs, Princes Street..	1 15 6	..	33 14 6	..
	T. Crook ..	23456	Sept...	..	60 0 0	..	..	,,	T. Crook, Lloyds, Fenchurch Street	..	..	60 0 0	..
	L. Solomon ..	32614	Oct. ..	..	..	13 3 8	..	,,	Cash	..	0 6 7	12 17 1	..
	F. Hardy ..	35678	New ..	20 10 6	..	..	..	,,	F. Hardy, Bank of England, E.C.	5 0 0	..	15 10 6	..
				20 10 6	60 0 0	48 13 8	129 4 2			6 15 6	0 6 7	122 2 1	129 4 2

NEW PREMIUM REGISTER.

Date.	Policy No.	Within United Kingdom. Life. H.O.	Within U.K. Life. Branch.	Within U.K. Life. Agents.	Within U.K. Capital Redemption. H.O.	Within U.K. Capital Redemption. Branch.	Within U.K. Capital Redemption. Agents.	Out of United Kingdom. Life. Branch.	Out of U.K. Life. Agents.	Out of U.K. Capital Redn. Branch.	Out of U.K. Capital Redn. Agents.	Fo.	Debit.	Total.
		£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.			£ s. d.
1922. Oct. 1	35678	20 10 6	..	..	..	..	..	..	..	..	..	Branch & Agents' Ledger.	....	20 10 6
,,	9	..	..	..	..	80 0 0	..	..	..	..	..		Birmingham	80 0 0
,,	35680	..	10 0 0	..	..	..	..	..	..	..	..		Cardiff	10 0 0
,,	1	..	..	..	13 3 3	..	..	..	..	..	..		....	13 3 3
,,	2	..	9 3 4	..	..	..	..	..	..	..	..		Edinburgh	9 3 4
,,	3	..	..	..	..	..	..	..	..	..	10 8 6		Capetown—Smith ..	10 8 6
,,	4	..	..	12 12 1	..	..	..	..	..	..	..		Peckham—Roberts ..	12 12 1
,,	5	..	..	..	..	..	1 3 5	..	..	..	..		Ramsgate—Jones ..	1 3 5
,,	6	..	..	8 7 2	..	..	..	..	..	..	..		Belfast—Cook	8 7 2
		20 10 6	19 3 4	20 19 3	13 3 3	80 0 0	1 3 5	..	..	..	10 8 6			165 8 3

Totals cast monthly.

The Branch column, if necessary, could be analysed into each Branch, so that, for instance, the Birmingham Branch new premiums for October could be debited to the Branch in the Branch Ledger in one amount, instead of a number of individual amounts.

RENEWAL PREMIUM DEBIT JOURNAL.

Date.	Debit.		Within United Kingdom. Life. H.O.	Within U.K. Life. Branch.	Within U.K. Life. Agents.	Within U.K. Capital Redemption. H.O.	Within U.K. Capital Redemption. Branch.	Within U.K. Capital Redemption. Agents.	Out of United Kingdom. Life. Branch.	Out of U.K. Life. Agents.	Out of U.K. Capital Redn. Branch.	Out of U.K. Capital Redn. Agents.	Fo.	Total.
			£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.		£ s. d.
1922. Oct.	Head Office ..	Renewals	1,000 0 0	..	..	50 0 0	..	..	..	..	..	..	Branch & Agents' Ledger.	1,050 0 0
,,	Birmingham ..	Branch ..	..	230 0 0	..	..	..	..	..	..	..	..		230 0 0
,,	Cardiff	,, ..	..	120 0 0	..	..	5 10 0	..	..	..	..	..		125 10 0
,,	Edinburgh ..	,, ..	..	328 0 0	..	..	22 5 0	..	..	..	..	..		350 5 0
,,	Capetown .. etc.	Smith .. etc.	..	..	..	..	..	..	36 0 0	..	..	22 0 0		58 0 0
,,			1,000 0 0	678 0 0	..	50 0 0	27 15 0	..	36 0 0	..	..	22 0 0		1,813 15 0
,,	New premiums	.. ..	20 10 6	19 3 4	20 19 3	13 3 3	80 0 0	1 3 5	..	..	..	10 8 6		165 8 3
Outstanding Premium Accounts, *Dr.*			1,020 10 6	697 3 4	20 19 3	63 3 3	107 15 0	1 3 5	36 0 0	..	..	32 8 6		1,979 3 3
			£1,738 13 1			£172 1 8			£36		£32 8 6			Premiums A/c *Cr.*

Totals for the month.

CLAIMS ACCOUNT—GENERAL LEDGER.

Dr.

Date.		Within Death.	Within Matured.	Within Cap. Redn.	Out of Death.	Out of Matured.	Out of Cap. Redn.	Total.
		£ s.	£ s.	£ s.	£ s.	£ s.	£ s.	£ s.
1922. Dec. 30	Claims General ..	2,000 0	..	..	189 15	..	..	2,189 15
	Endowments ..	..	958 0	..	..	..	..	958 0
	Capital Redn. ..	..	..	200 0	..	..	..	200 0
		2,000 0	958 0	200 0	189 15	..	..	3,347 15

Cr.

Date.		Within Death.	Within Matured.	Within Cap. Redn.	Out of Death.	Out of Matured.	Out of Cap. Redn.	Total.
		£ s.	£ s.	£ s.	£ s.	£ s.	£ s.	£ s.
1922. Dec. 30	Life Assur. Fund	2,000 0	958 0	..	189 15	..	..	3,147 15
"	Capital Redn. Fund	..	..	200 0	..	..	..	200 0
		2,000 0	958 0	200 0	189 15	..	..	3,347 15

CLAIMS REGISTER.

Date.	Particulars of Claim.	By Death. Sum Assd.	By Death. Bonus.	By Death. Int. Bonus.	By Maturity. Sum Assd.	By Maturity. Bonus.	By Maturity. Int. Bonus.	Capital Redemption.	Total.	Outstanding, 30 : 12 : .... Life.	Outstanding, 30 : 12 : .... Matured.	Outstanding, 30 : 12 : .... Cap. Redn.	Claim Paid.
		£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.	
	See note *	100 0 0	73 10 0	16 5 0	..	..	..	..	189 15 0	189 15 0	..	..	
		..	..	..	500 0 0	..	..	..	500 0 0	..	..	..	Oct. 31
		2,000 0 0	..	..	..	..	..	..	2,000 0 0	..	..	..	Nov. 4
		..	..	..	300 0 0	109 10 0	48 10 0	..	458 0 0	..	..	..	Oct. 20
		..	..	..	..	..	..	200 0 0	200 0 0	..	..	..	Oct. 16
		2,000 0 0	..	..	800 0 0	109 10 0	48 10 0	200 0 0	3,158 0 0	189 15 0	..	..	
	Add Claims "Out of U.K."	100 0 0	73 10 0	16 5 0	..	..	..	..	189 15 0	..	..	..	
	Total for year	2,100 0 0	73 10 0	16 5 0	800 0 0	109 10 0	48 10 0	200 0 0	3,347 15 0	189 15 0	..	..	

Outstanding Claim Accounts, *Cr.* Claims, *Dr.*

* *If the Claims "Out of the United Kingdom" are numerous a section of the Claims Register must be allotted thereto; if few in number, insertion in red ink and double totals would suffice, as shown in the illustration.*

HEAD OFFICE PREMIUM COMMISSION REGISTER: COMMISSIONS PAYABLE.

Date.		Life Assured.	Policy No.	Premium.	Due.	Rate of Com.	Commission Payable.		Commission Deducted.		Agent.	Posted.
							Life.	Cap. Redn.	Life.	Cap. Redn.		
				£ s. d.		%	£ s. d.	£ s. d.	£ s. d.	£ s. d.		
1922 Oct.	31	S. Lloyd ..	21303	35 10 0	Oct.	5	1 15 6	..	1 15 6	..	S. Lloyd ..	
,,	,,	T. Crook ..	23456	60 0 0	Sept.	5	3 0 0	..	..	..	J. Jones ..	
,,	,,	L. Solomon	32014	13 3 8	Oct.	2½	..	6 7	..	6 7	L. Solomon	
,,	,,	F. Hardy ..	35678	New £500	..	20/-	5 0 0	..	5 0 0	..	F. Hardy ..	
							9 15 6	6 7	6 15 6	6 7		
							6 7	..	6 7	..		
							10 2 1	..	7 2 1	..		

Commission, *Dr.* £10 2 1
Commission Outstanding, *Cr.* £10 2 1

Commission Outstanding *Dr* £7 2 1
Head Office Premiums, *Cr.* £7 2 1

HEAD OFFICE PREMIUM COMMISSION REGISTER: COMMISSIONS PAID.

Date		Details as per Account No.	Life.		Capital Redemption.		Agent.	Posted.
			Cheque.	Cash.	Cheque.	Cash.		
1922 Nov.	16	3169	£ s. d. 3 0 0				J. Jones.	

CASH AGENTS' COMMISSION ACCOUNT.

Account—J. Jones.

Date.	Name.	Policy.	Due.	Com. Reg.	Debits.	Credits.	How paid.
					£ s. d.	£ s. d.	
1922.							
Oct. 31	T. Crook ..	23456	Sept. 12	..	..	3 0 0	..
Nov. 16	T. Crook ..	23456	,,	..	3 0 0	..	Cheque
,, 30	Own Life ..	30200	Mar. 12	..	1 10 0	1 10 0	Deducted.
	Etc., etc.						

CHAPTER XVII.

COMPOUND INTEREST TABLES.

By R. C. Simmonds, F.I.A.

In view of the inclusion of some interest tables in the present (as in the previous) edition of this work, and in view also of the fact that compound interest tables form one of the subjects of the examinations of the Chartered Insurance Institute, it has been thought advisable to make a few elementary remarks upon such tables.

Considerations of space forbid any attempt at a comprehensive treatment of the subject of compound interest, and, indeed, it is unnecessary, since the student who wishes to go deeply into the matter will find all that he needs in the appropriate chapter of Hall and Knight's Advanced Algebra and in Part I. of the Text-Book of the Institute of Actuaries. Our aim is merely to explain (*a*) what the functions tabulated in Appendix C represent and (*b*) how they may be used in practice.

As regards (*a*) we may note that there are four tables, each giving values of a different function. It will be observed that throughout the tables we have used the word "intervals" instead of the word "years." The reason for this change from ordinary practice lies in the fact that, although a year is the conventional interval and rates of interest are usually expressed as being so much *per annum*, the transactions of practical work are based more often upon the actual payment of interest at half-yearly or quarterly intervals. Thus, the British Government 5 per cent. War Loan bears interest at 5 per cent. per annum, but two payments of interest are made each year—one of 2½ per cent. on 1st June and another of like amount on 1st December. Again, Consols confer the right to interest at 2½ per cent. per annum, but such interest is paid in equal quarterly amounts of 12*s*. 6*d*. per cent.; and so it is in many other cases. Now, in the theory of compound interest, we assume that money is never idle. Accordingly, the earlier payments of interest in any year are assumed to earn interest themselves, with the result that, at the end of the year, the total interest received is slightly more on the basis of quarterly payments than it would have been on the basis of half-yearly payments and yet greater than it would have been on the basis of a single annual payment. Thus, we see that, with compound interest, the actual interval and not the conventional year is the important point. In saying this we must mention that, often in the course of their studies and occasionally in practice, students are required to deal with problems in which a series of payments of interest due (say) at half-yearly intervals, has to be valued at another rate of interest assumed to be due (say) once yearly. For example, it might be necessary to calculate the value of £100 (nominal) of Consols upon the basis that the quarterly income to be received should be equivalent to a return of 4 per cent. per annum (payable at the end of each year) on the price paid. In such a case the tables in this book would not apply without modification. We touch upon this question because it is a fruitful source of misunderstanding. For a full discussion of these points the student should consult Part I. of the Text-Book of the Institute of Actuaries, Chapters I. and III. (particularly section 20 of the latter chapter).

Table I., in Appendix C of this volume, shows the amount to which a single unit invested at the outset would have accumulated, at the end of a number of equal intervals, given a constant rate of interest per interval.

For example, 2·19112 is the amount of 1 at the end of 20 intervals if the rate of interest be 4 per cent. per interval.

Table II. shows the value, now, of a single unit due for payment in full at the end of a number of equal intervals, given a constant rate of interest per interval.

For example, ·45639 is the present value of 1 due at the end of 20 intervals if the rate of interest be 4 per cent. per interval.

NOTE.—By proportion, 1 is the present value of $\frac{1}{\cdot 45639}$, *i.e.*, of 2·19112. This shows the connection between Tables I. and II., since we have seen already that the amount of 1, in the circumstances assumed, would be 2·19112.

When we come to tables like Tables III. and IV. (which deal not with a single unit but with a series of units invested, or due, at equal intervals) it is important to note whether each payment is invested (or is due) at the *beginning* or at the *end* of an interval. Clearly the results will differ accordingly.

Table III. shows the amount to which a series of units, invested successively at the end of each interval, would have accumulated at the end of a number of intervals, given a constant rate of interest per interval.

For example, 15·0258 is the total amount at the end of 12 intervals of a series of units invested at the end of each interval, if the rate of interest be 4 per cent. per interval.

Table IV. shows the value, now, of a series of units, each due for payment at the end of successive intervals, given a constant rate of interest per interval.

For example, 9·3851 is the present value of 1 per interval, due at the end of each of 12 intervals, if the rate of interest be 4 per cent. per interval.

The form in which Tables III. and IV. are presented in this Edition is the usual one, but seeing that, in practical work, payments are often due at the beginning of each interval, it is important to consider how to adapt the figures accordingly. The following diagram will assist in making the process clear :—

Total number of intervals	0	1	2	3	4	5	6	7	8	9	10	11	12
Interval No.	A	1	2	3	4	5	6	7	8	9	10	11	12 B
Payment at end of interval		x	x	x	x	x	x	x	x	x	x	x	x
Payment at beginning of interval	o	o	o	o	o	o	o	o	o	o	o	o	

In the line at the head of the diagram there are 12 equal spaces, each representing one interval. The point A is at the beginning and the point B is at the end. If we are considering present values (Tables II. and IV.) we take our stand at A ; if, however, we are dealing with amounts (Tables I. and III.) we take our stand at B.

In the example chosen for Table III., 15·0258 would be the accumulation, at the point B, of the 12 units each denoted by an x. Now let us suppose that, instead of being payable at the end of the interval, each unit were due at the beginning (as in the row marked by o's). Then clearly, each o will have accumulated at the point B, for one more interval than the corresponding x, so that one way of adapting the figures of Table III. would be to increase them by interest for one interval (that is to say—in the case of our example—to multiply by 1·04). Another method can be deduced quite easily as follows :— If there were an additional x in the vacant position at the point A, the accumulation at the point B would then represent 13 units, each paid at the *end* of an interval (the newly-inserted x being thus assumed to relate to an interval lying to the left of A). If now from this accumulation, we remove the x at the point B, we are left with 12 units each paid at the *beginning* of an interval. The value of the x removed is clearly 1, since it has only just been paid and, therefore, has had no time to accumulate. Thus, all we have to do, to adjust the figures in Table III. for payments at the beginning of each interval, is to take the value for the number of intervals next *greater* than the one required and to *deduct* 1.

We show the results of the two methods below :—

1st method.—Take value for correct number of intervals and add interest for one interval.

Value for 12 intervals, as above	15·0258
4 per cent. thereof	·6010
Result	15·6268

2nd method.—Take value for next higher number of intervals and deduct 1.

Value for 13 intervals (Table III.)	16·6268
Deduct 1	1·0000
Result	15·6268

As regards Table IV., the example given above is 9·3851, and is the value, at the point A, of the 12 units each denoted by an x. By a process similar to the second method deduced for Table III. (there is a process analogous to the first one but it is not necessary to go into it here), we arrive at the rule: to adapt the figures in Table IV. to the case of payments due at the *beginning* of each interval, take the tabular value for the number of intervals next *lower* than the one required and *add* 1.

Before leaving this branch of our subject, we may mention that each value in Table III. can be derived by adding up a number of values in the corresponding column of Table I. Thus, for our example (15·0258) we must sum the first eleven values in the 4 per cent. column of Table I. and add 1 to the result.

If we look at our diagram, we shall see why this result must follow. The x on the left hand side has accumulated, at point B, for 11 intervals; the next one, to the right, has accumulated for 10 intervals, and so on up to the last one which has not accumulated at all. Thus, the value for Table III. consists of the summation of values from Table I. for the first eleven intervals with 1 added at the end.

Similarly, the figures in Table IV. can be obtained by summing the first twelve values in the corresponding column of Table II.

And now to refer briefly to (*b*)—how may these tables be used in practice? Quite obviously, they may be employed in finding the amounts and present values of single units or of series of units; and, if the problem awaiting solution be a straightforward example of one of these two possibilities, there is no need of further remark. Very often, however, this is not the case. Suppose that we are required to value a debenture redeemable in 20 years at 100 and yielding a yearly income of 5. In the form given, the security is neither a single payment nor a series of uniform payments. The first step consists in splitting it up, whereupon it becomes clear that the sum of 100 due at the end of 20 years can be valued at once by Table II., and the yearly income of 5 for 20 years by Table IV. To show the process, let us assume that we are required to ascertain the value of the debenture to a purchaser who wishes to secure $4\frac{1}{2}$ per cent. per annum on his outlay.

Then, 100 due at the end of 20 intervals—interest $4\frac{1}{2}$ per cent. per interval—is now worth	41·46	(Table II.)
and, 5 due at the end of each of the next 20 intervals—interest as above—is now worth	65·04	(Table IV.)
Total value	106·50	

Before leaving the question of debentures, we must point out that, although the general principles of valuation are those which we have explained, our example is of the simplest possible type and that, in practice, many points have to be watched. For a full discussion of the subject, reference should be made to Chapter V. of Part I. of the Text-Book of the Institute of Actuaries.

Again, suppose that a loan has been raised by a local authority and that (as is so often the case) it is to be repaid by means of equal periodical sums to include both principal and current interest. We may regard the borrowers as having received, in cash, the present value of a series of equal (but at present unknown, because unascertained) payments. Table IV. enables us to solve the question because it gives the present value of a series of units, and by proportion we may arrive at our result.

Thus, if the loan were 100, the period 20 years and the rate of interest 4 per cent. per year, we should have :—

By Table IV., 13·5903 is the present value of 20 payments of 1 each due at the end of successive years.

Therefore 100 is the present value of 20 payments of 100 ÷ 13·5903 similarly due.

The result is 7·3582.

This suggests a development of the example which will serve as a further illustration. Suppose that the borrowers, instead of paying back principal and interest in a combined annual sum of 7·3582, promised to pay interest yearly and to restore the whole of the capital at the end of the time. Prudence might suggest to them the advisability of setting aside each year a sum by way of sinking-fund and accumulating it at interest against the eventual demand. What sum should be so set aside ? Table III. supplies the answer by proportion, thus :—

29·7781 is the accumulation at the end of 20 years (interest 4 per cent. per annum) of 20 successive units.

Therefore 100 is the similar accumulation of 20 successive sums of 100 ÷ 29·7781.

The result is 3·3582.

The total annual outlay of the borrowers would thus be :—

For interest	4·0000
For sinking fund	3·3582
	7·3582

This is identical with the sum required by the first method of repayment, as, of course, it must be so long as only one rate of interest is used in the calculations. On this part of the subject reference should be made to Chapter IV. of the Text-Book already mentioned.

Finally, the Tables can be used in connection with Sinking Fund or Capital Redemption Assurances. The annual premiums for such policies are, of course, a series of payments due in advance, so that their present value can be obtained by the use of figures from Table IV. adapted in the manner already explained. The sum assured is a single sum due at the end of a number of years and its present value can be deduced at once from Table II. By a simple process of equation the actual premium can be found. For example, suppose that we require the annual premium for a policy assuring 100 payable at the end of 20 years—interest 3 per cent. per annum.

Then, by Table II., 100 due at the end of 20 years has a present value of 55·37, and, by Table IV. (adapted), a series of units, payable yearly in advance for 20 years, has a present value of 15·3238.

In order to make the present value of the premiums equal to that of the sum assured (that is to say, in order to find the proper amount of each annual premium) we must increase the unit in the ratio of 55·37 to 15·3238, *i.e.*, we must make it 3·613.

Thus, 3·613 is the required yearly premium. To test it, we may (by the aid of Table III., duly adapted as already explained), accumulate the premiums up to the end of the term when, of course, they should be equal to the sum assured. The appropriate value per unit is 27·6765. Consequently 3·613 × 27·6765 is the result and this is found to be very slightly under 100—the error is due merely to paucity of figures.

For a full discussion of the questions relating to policies of this kind reference should be made to Chapter VII. of the Text-Book. Students desirous of learning how actually to construct the tables which have formed the subject of our brief discussion, should consult Chapter VIII. of the same book.

(The only reading suggested is that referred to in the text. Hall and Knight's Advanced Algebra is published by Macmillan & Co., and Part I. of the Text-Book of the Institute of Actuaries is supplied, on behalf of the Institute, by C. & E. Layton.)

APPENDIX A.

PRINCIPAL ENACTMENTS RELATING TO LIFE ASSURANCE COMPANIES.

(1) The Life Assurance Act, 1774.

(2) Policies of Assurance Act, 1867.

(3) Married Women's Property Act, 1870. Section 10.

(4) Married Women's Policies of Assurance (Scotland) Act, 1880.

(5) Married Women's Property Act, 1882. Section 11.

(6) Life Assurance Companies (Payment into Court) Act, 1896.

(7) Assurance Companies Act, 1909, with Rules, etc. thereunder.

Note.—A useful paper by Mr. A. R. Barrand dealing with certain portions of the Assurance Companies Act, 1909, will be found in J.I.A., Vol. xlv., p. 257.

LIFE ASSURANCE ACT, 1774.

ANNO DECIMO QUARTO GEORGII III. REGIS.

[Chap. 48.]

An Act for regulating Insurances upon Lives, and for prohibiting all such Insurances, except in Cases where the Persons insuring shall have an Interest in the Life or Death of the Persons insured.

Preamble.

WHEREAS it hath been found by Experience, that the making Insurances on Lives, or other Events, wherein the Assured shall have no Interest, hath introduced a mischievous Kind of Gaming: For Remedy whereof, be it enacted by the King's most Excellent Majesty, by and with the Advice and Consent of the Lords Spiritual and Temporal, and Commons, in this present Parliament assembled, and by the Authority of the same, That from and after the passing of this Act, no Insurance shall be made by any Person or Persons, Bodies Politick or Corporate, on the Life or Lives of any Person or Persons, or on any other Event or Events whatsoever, wherein the Person or Persons for whose Use, Benefit, or on whose Account such Policy or Policies shall be made, shall have no Interest, or by way of Gaming or Wagering; and that every Assurance made, contrary to the true Intent and Meaning hereof, shall be null and void, to all Intents and Purposes whatsoever.

No insurance to be made on the lives of persons having no interest, &c.

No Policies on Lives without inserting the persons names, &c.

And be it further enacted, That it shall not be lawful to make any Policy or Policies on the Life or Lives of any Person or Persons, or other Event or Events, without inserting in such Policy or Policies the Person or Persons Name or Names interested therein, or for whose Use, Benefit, or on whose Account, such Policy is to be made or underwrote.

How much may be recovered where the insured hath interest in lives.

And be it further enacted, That in all Cases where the Insured hath interest in such Life or Lives, Event or Events, no greater Sum shall be recovered or received from the Insurer or Insurers than the Amount or Value of the Interest of the Insured in such Life or Lives, or other Event or Events.

Not to extend to insurances on ships, goods, &c.

Provided always, That nothing herein contained shall extend, or be construed to extend, to Insurances *bonâ fide* made by any Person or Persons, on Ships, Goods, or Merchandises; but every such Insurance shall be as valid and effectual in the Law, as if this Act had not been made.

POLICIES OF ASSURANCE ACT, 1867.

[30 and 31 Vict., Chap. 144. 20th August, 1867.]

WHEREAS it is expedient to enable assignees of policies of life assurance to sue thereon in their own names: Be it enacted by the Queen's most excellent Majesty, by and with the advice and consent of the Lords Spiritual and Temporal, and Commons, in this present Parliament assembled, and by the authority of the same, as follows:

1.—Any person or corporation now being or hereafter becoming entitled, by assignment or other derivative title, to a policy of life assurance, and possessing at the time of action brought the right in equity to receive and the right to give an effectual discharge to the assurance company liable under such policy for monies thereby assured or secured, shall be at liberty to sue at Law in the name of such person or corporation to recover such monies. Assignees of life policies may sue in their own names.

2.—In any action on a policy of life assurance, a defence on equitable grounds, or a reply to such defence on similar grounds, may be respectively pleaded and relied upon in the same manner and to the same extent as in any other personal action. Defence or reply on equitable grounds may be pleaded.

3.—No assignment made after the passing of this Act of a policy of life assurance shall confer on the assignee therein named, his executors, administrators, or assigns, any right to sue for the amount of such policy, or the monies assured or secured thereby, until a written notice of the date and purport of such assignment shall have been given to the assurance company liable under such policy at their principal place of business for the time being, or in case they have two or more principal places of business, then at some one of such principal places of business, either in *England* or *Scotland* or *Ireland*, and the date on which such notice shall be received shall regulate the priority of all claims under any assignment; and a payment *bonâ fide* made in respect of any policy by any assurance company before the date on which such notice shall have been received shall be as valid against the assignee giving such notice as if this Act had not been passed. Notice of assignment to be given.

4.—Every assurance company shall, on every policy issued by them after the Thirtieth Day of *September*, One thousand eight hundred and sixty-seven, specify their principal place or principal places of business at which notices of assignment may be given in pursuance of this Act. Principal places of business to be specified on policies.

5.—Any such assignment may be made either by endorsement on the policy or by a separate instrument in the words or to the effect set forth in the schedule hereto, such endorsement or separate instrument being duly stamped. Assignment by endorsement or separate instrument.

6.—Every assurance company to whom notice shall have been duly given of the assignment of any policy under which they are liable shall, upon the request in writing of any person by whom any such notice was given or signed, or of his executors or administrators, and upon payment in each case of a fee not exceeding Five Shillings, deliver an acknowledgment in writing under the hand of the manager, secretary, treasurer, or other principal officer of the assurance company of their receipt of such notice; and every such written acknowledgment, if signed by a person Notices of assignment to be acknowledged.

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being *de jure* or *de facto* the manager, secretary, treasurer, or other principal officer of the assurance company whose acknowledgment the same purports to be, shall be conclusive evidence as against such assurance company of their having duly received the notice to which such acknowledgment relates.

Interpretation of terms. 7.—In the construction and for the purposes of this Act the expression " Policy of Life Assurance," or " Policy," shall mean any instrument by which the payment of monies, by or out of the funds of an assurance company, on the happening of any contingency depending on the duration of human life, is assured or secured ; and the expression " Assurance Company " shall mean and include every corporation, association, society, or company, now or hereafter carrying on the business of assuring lives or survivorships, either alone or in conjunction with any other object or objects.

Not to apply to contracts under certain Acts. 8.—Provided always, That this Act shall not apply to any policy of assurance granted or to be granted or to any contract for a payment on death entered into or to be entered into in pursuance of the Provisions of the Acts Sixteenth and Seventeenth *Victoria*, Chapter Forty-five, and Twenty-seventh and Twenty-eighth *Victoria*, Chapter Forty-three, or either of those Acts, or to any engagement for payment on death by any Friendly Society.

Short title. 9.—For all purposes this Act may be cited as " The Policies of Assurance Act, 1867."

SCHEDULE.

I, *A.B.* of, *&c.*, in consideration of, *&c.*, do hereby assign unto *C.D.* of, *&c.*, his executors, administrators, and assigns, the [within] policy of assurance granted, *&c.* [*here describe the policy*]. In witness, &c.

MARRIED WOMEN'S PROPERTY ACT, 1870.

[33 and 34 Vict., Chap. 93. 9th August, 1870.]

Insurance Clause.

Sect. 10. A married woman may effect a policy of insurance upon her own life or the life of her husband for her separate use, and the same and all benefit thereof, if expressed on the face of it to be so effected, shall enure accordingly, and the contract in such policy shall be as valid as if made with an unmarried woman. Married woman may effect policy of insurance.

A policy of insurance effected by any married man on his own life, and expressed upon the face of it to be for the benefit of his wife or of his wife and children, or any of them, shall enure and be deemed a trust for the benefit of his wife for her separate use, and of his children, or any of them, according to the interest so expressed, and shall not, so long as any object of the trust remains, be subject to the control of the husband or to his creditors, or form part of his estate. When the sum secured by the policy becomes payable, or at any time previously, a trustee thereof may be appointed by the Court of Chancery in England or in Ireland according as the policy of insurance was effected in England or in Ireland, or in England by the Judge of the County Court of the district, or in Ireland by the chairman of the Civil Bill Court of the division of the county in which the insurance office is situated, and the receipt of such trustee shall be a good discharge to the office. If it shall be proved that the policy was effected and premiums paid by the husband with intent to defraud his creditors, they shall be entitled to receive out of the sum secured an amount equal to the premiums so paid. As to insurance of a husband for benefit of his wife.

MARRIED WOMEN'S POLICIES OF ASSURANCE (SCOTLAND) ACT, 1880.

[43 and 44 Vict., Chap. 26. 26th August, 1880.]

WHEREAS, by the Married Women's Property Act, 1870, increased facilities are given for effecting policies of assurance for the benefit of married women and children in England and Ireland:

And whereas it is expedient that such increased facilities for effecting policies of assurance for the benefit of married women and children should be extended to Scotland:

Be it therefore enacted by the Queen's most Excellent Majesty, by and with the advice and consent of the Lords Spiritual and Temporal, and Commons, in this present Parliament assembled, and by the authority of the same, as follows:

Married woman may effect policy of assurance for her separate use.

1.—A married woman may effect a policy of assurance, on her own life or on the life of her husband for her separate use; and the same and all benefit thereof, if expressed to be for her separate use, shall, immediately on being so effected, vest in her, and shall be payable to her, and her heirs, executors, and assignees, excluding the *jus mariti* and right of administration of her husband, and shall be assignable by her either *inter vivos* or *mortis causa* without consent of her husband; and the contract in such policy shall be as valid and effectual as if made with an unmarried woman.

Policy of assurance may be effected in trust for wife and children.

2.—A policy of assurance effected by any married man on his own life, and expressed upon the face of it to be for the benefit of his wife, or of his children, or of his wife and children, shall, together with all benefit thereof, be deemed a trust for the benefit of his wife for her separate use, or for the benefit of his children, or for the benefit of his wife and children; and such policy, immediately on its being so effected, shall vest in him and his legal representatives in trust for the purpose or purposes so expressed, or in any trustee nominated in the policy, or appointed by separate writing duly intimated to the assurance office, but in trust always as aforesaid, and shall not otherwise be subject to his control, or form part of his estate, or be liable to the diligence of his creditors, or be revocable as a donation, or reducible on any ground of excess or insolvency: And the receipt of such trustee for the sums secured by the policy, or for the value thereof, in whole or in part, shall be a sufficient and effectual discharge to the assurance office: Provided always, that if it shall be proved that the policy was effected and premiums thereon paid with intent to defraud creditors, or if the person upon whose life the policy was effected shall be made bankrupt within two years from the date of such policy, it shall be competent to the creditors to claim repayment of the premiums so paid from the trustee of the policy out of the proceeds thereof.

Application and short title of Act.

3.—This Act shall apply only to Scotland, and may be cited as the Married Women's Policies of Assurance (Scotland) Act, 1880.

MARRIED WOMEN'S PROPERTY ACT, 1882.

[45 and 46 Vict., Chap. 75. 18th August, 1882.]

Insurance Clause.

Sect. 11. A married woman may by virtue of the power of making contracts hereinbefore contained effect a policy upon her own life or the life of her husband for her separate use; and the same and all benefit thereof shall enure accordingly.

Moneys payable under policy of assurance not to form part of estate of the insured.

A policy of assurance effected by any man on his own life, and expressed to be for the benefit of his wife, or of his children, or of his wife and children, or any of them, or by any woman on her own life, and expressed to be for the benefit of her husband, or of her children, or of her husband and children, or any of them, shall create a trust in favour of the objects therein named, and the moneys payable under any such policy shall not, so long as any object of the trust remains unperformed, form part of the estate of the insured, or be subject to his or her debts: Provided, that if it shall be proved that the policy was effected and the premiums paid with intent to defraud the creditors of the insured, they shall be entitled to receive, out of the moneys payable under the policy, a sum equal to the premiums so paid. The insured may by the policy, or by any memorandum under his or her hand, appoint a trustee or trustees of the moneys payable under the policy, and from time to time appoint a new trustee or new trustees thereof, and may make provision for the appointment of a new trustee or new trustees thereof, and for the investment of the moneys payable under any such policy. In default of any such appointment of a trustee, such policy, immediately on its being effected, shall vest in the insured and his or her legal personal representatives, in trust for the purposes aforesaid. If, at the time of the death of the insured, or at any time afterwards, there shall be no trustee, or it shall be expedient to appoint a new trustee or new trustees, a trustee or trustees or a new trustee or new trustees may be appointed by any court having jurisdiction under the provisions of the Trustee Act, 1850, or the Acts amending and extending the same. The receipt of a trustee or trustees duly appointed, or, in default of any such appointment, or in default of notice to the insurance office, the receipt of the legal personal representative of the insured shall be a discharge to the office for the sum secured by the policy, or for the value thereof, in whole or in part.

13 & 14 Vict., c. 60

LIFE ASSURANCE COMPANIES (PAYMENT INTO COURT) ACT, 1896.

[59 Vict., Chap. 8. 21st May, 1896.]

An Act to enable Life Assurance Companies to pay Money into Court in certain Cases.

BE it enacted by the Queen's most Excellent Majesty, by and with the advice and consent of the Lords Spiritual and Temporal, and Commons, in this present Parliament assembled, and by the authority of the same, as follows:

Short title.

1.—This Act may be cited as the Life Assurance Companies (Payment into Court) Act, 1896.

Interpretation.

2.—In this Act—

The expression "life assurance company" means any corporation, company, or society carrying on the business of life assurance, not being a society registered under the Acts relating to friendly societies;

The expression "life policy" includes any policy not foreign to the business of life assurance.

Power to pay money into court.

3.—Subject to rules of court any life assurance company may pay into the High Court, or where the head office of the company is situated within the jurisdiction of the Chancery Court of the County Palatine of Lancaster either into that court or into the High Court, any moneys payable by them under a life policy in respect of which, in the opinion of their board of directors, no sufficient discharge can otherwise be obtained.

Receipt of officer sufficient discharge.

4.—The receipt or certificate of the proper officer shall be a sufficient discharge to the company for the moneys so paid into court, and such moneys shall, subject to rules of court, be dealt with according to the orders of the High Court or the Palatine Court, as the case may be.

Extent of Act.

5.—This Act does not extend to Scotland.

ASSURANCE COMPANIES ACT, 1909.

[9 Edward VII., Chap. 49. 3rd December, 1909.]

An Act to consolidate and amend and extend to other Companies carrying on Assurance or Insurance business the Law relating to Life Assurance Companies, and for other purposes connected therewith.

BE it enacted by the King's most Excellent Majesty, by and with the advice and consent of the Lords Spiritual and Temporal, and Commons, in this present Parliament assembled, and by the authority of the same, as follows:

Companies to which Act applies.

1.—This Act shall apply to all persons or bodies of persons, whether corporate or unincorporate, not being registered under the Acts relating to friendly societies or to trade unions (which persons and bodies of persons are hereinafter referred to as assurance companies), whether established before or after the commencement of this Act and whether established within or without the United Kingdom, who carry on within the United Kingdom assurance business of all or any of the following classes: Companies to which Act applies.

(*a*) Life assurance business; that is to say, the issue of, or the undertaking of liability under, policies of assurance upon human life, or the granting of annuities upon human life;

(*b*) Fire insurance business; that is to say, the issue of, or the undertaking of liability under, policies of insurance against loss by or incidental to fire;

(*c*) Accident insurance business; that is to say, the issue of, or the undertaking of liability under, policies of insurance upon the happening of personal accidents, whether fatal or not, disease, or sickness, or any class of personal accidents, disease, or sickness;

(*d*) Employers' liability insurance business; that is to say, the issue of, or the undertaking of liability under, policies insuring employers against liability to pay compensation or damages to workmen in their employment;

(*e*) Bond investment business; that is to say, the business of issuing bonds or endowment certificates by which the company, in return for subscriptions payable at periodical intervals of two months or less, contract to pay the bond holder a sum at a future date, and not being life assurance business as hereinbefore defined;

subject as respects any class of assurance business to the special provisions of this Act relating to business of that class.

A company registered under the Companies Acts which transacts assurance business of any such class as aforesaid in any part of the world shall for the purposes of this provision be deemed to be a company transacting such business within the United Kingdom.

General.

2.—(1) Every assurance company shall deposit and keep deposited with the Paymaster-General for and on behalf of the Supreme Court the sum of twenty thousand pounds. Deposit.

(2) The sum so deposited shall be invested by the Paymaster-General in such of the securities usually accepted by the Court for the investment of funds placed under its administration as the company may select, and the interest accruing due on any such securities shall be paid to the company.

(3) The deposit may be made by the subscribers of the memorandum of association of the company, or any of them, in the name of the proposed company, and, upon the incorporation of the company, shall be deemed to have been made by, and to be part of the assets of, the company, and the registrar shall not issue a certificate of incorporation of the company until the deposit has been made.

(4) Where a company carries on, or intends to carry on, assurance business of more than one class, a separate sum of twenty thousand pounds shall be deposited and kept deposited under this section as respects each class of business, and the deposit made in respect of any class of business in respect of which a separate assurance fund is required to be kept shall be deemed to form part of that fund, and all interest accruing due on any such deposit or the securities in which it is for the time being invested shall be carried by the company to that fund.

(5) The Paymaster-General shall not accept a deposit except on a warrant of the Board of Trade.

(6) The Board of Trade may make rules with respect to applications for warrants, the payment of deposits, and the investment thereof or dealing therewith, the deposit of stocks or other securities in lieu of money, the payment of the interest or dividends from time to time accruing due on any securities in which deposits are for the time being invested, and the withdrawal and transfer of deposits, and the rules so made shall have effect as if they were enacted in this Act, and shall be laid before Parliament as soon as may be after they are made.

(7) This section shall apply to an assurance company registered or having its head office in Ireland, subject to the following modifications:

References to the Supreme Court shall be construed as references to the Supreme Court of Judicature in Ireland, and references to the Paymaster-General shall be construed as references to the Accountant-General of the last-mentioned Court.

Separation of funds.

3.—(1) In the case of an assurance company transacting other business besides that of assurance or transacting more than one class of assurance business, a separate account shall be kept of all receipts in respect of the assurance business or of each class of assurance business, and the receipts in respect of the assurance business, or, in the case of a company carrying on more than one class of assurance business, of each class of business, shall be carried to and form a separate assurance fund with an appropriate name: Provided that nothing in this section shall require the investments of any such fund to be kept separate from the investments of any other fund.

(2) A fund of any particular class shall be as absolutely the security of the policy holders of that class as though it belonged to a company carrying on no other business than assurance business of that class, and shall not be liable for any contracts of the company for which it would not have been liable had the business of the company been only that of assurance of that class, and shall not be applied, directly or indirectly, for any purposes other than those of the class of business to which the fund is applicable.

Accounts and balance sheets.

4.—Every assurance company shall, at the expiration of each financial year of the company, prepare:

(*a*) A revenue account for the year in the form or forms set forth in the First Schedule to this Act and applicable to the class or classes of assurance business carried on by the company;

(*b*) A profit and loss account in the form set forth in the Second Schedule to this Act, except where the company carries on assurance business of one class only and no other business;

(*c*) A balance sheet in the form set forth in the Third Schedule to this Act.

5.—(1) Every assurance company shall, once in every five years, or at such shorter intervals as may be prescribed by the instrument constituting the company, or by its regulations or byelaws, cause an investigation to be made into its financial condition, including a valuation of its liabilities, by an actuary, and shall cause an abstract of the report of such actuary to be made in the form or forms set forth in the Fourth Schedule to this Act and applicable to the class or classes of assurance business carried on by the company. Actuarial report and abstract.

(2) The foregoing provisions of this section shall also apply whenever at any other time an investigation into the financial condition of an assurance company is made with a view to the distribution of profits, or the results of which are made public.

6.—Every assurance company shall prepare a statement of its assurance business at the date to which the accounts of the company are made up for the purposes of any such investigation as aforesaid in the form or forms set forth in the Fifth Schedule to this Act and applicable to the class or classes of assurance business carried on by the company: Provided that, if the investigation is made annually by any company, the company may prepare such a statement at any time, so that it be made at least once in every five years. Statement of assurance business.

7.—(1) Every account, balance sheet, abstract, or statement hereinbefore required to be made shall be printed, and four copies thereof, one of which shall be signed by the chairman and two directors of the company and by the principal officer of the company and, if the company has a managing director, by the managing director, shall be deposited at the Board of Trade within six months after the close of the period to which the account, balance sheet, abstract, or statement relates: Provided that, if in any case it is made to appear to the Board of Trade that the circumstances are such that a longer period than six months should be allowed, the Board may extend that period by such period not exceeding three months as they think fit. Deposit of accounts, &c., with Board of Trade.

(2) The Board of Trade shall consider the accounts, balance sheets, abstracts, and statements so deposited, and, if any such account, balance sheet, abstract, or statement appears to the Board to be inaccurate or incomplete in any respect, the Board shall communicate with the company with a view to the correction of any such inaccuracies and the supply of deficiencies.

(3) There shall be deposited with every revenue account and balance sheet of a company any report on the affairs of the company submitted to the shareholders or policy holders of the company in respect of the financial year to which the account and balance sheet relates.

(4) Where an assurance company registered under the Companies Acts in any year deposits its accounts and balance sheet in accordance with the provisions of this section, the company may, at the same time, send to the registrar a copy of such accounts and balance sheet; and, where such copy is so sent, it shall not be necessary for the company to send to the registrar a statement in the form of a balance sheet as required by subsection (3) of section twenty-six of the Companies (Consolidation) Act, 1908, and the copy of the accounts and balance sheet so sent shall be dealt with in all respects as if it were a statement sent in accordance with that subsection. 8 Edw. 7 c. 69.

Right of shareholders, &c., to copies of accounts, &c.

8.—A printed copy of the last-deposited accounts, balance sheet, abstract, or statement, shall on the application of any shareholder or policy holder of the company be forwarded to him by the company by post or otherwise.

Audit of accounts.

8 & 9 Vict., c. 16.

9.—Where the accounts of an assurance company are not subject to audit in accordance with the provisions of the Companies (Consolidation) Act, 1908, or the Companies Clauses Consolidation Act, 1845, relating to audit, the accounts of the company shall be audited annually in such manner as the Board of Trade may prescribe, and the regulations made for the purpose may apply to any such company the provisions of the Companies (Consolidation) Act, 1908, relating to audit, subject to such adaptations and modifications as may appear necessary or expedient.

List of shareholders.

10.—Every assurance company which is not registered under the Companies Acts, or which has not incorporated in its deed of settlement section ten of the Companies Clauses Consolidation Act, 1845, shall keep a "Shareholders' Address Book," in accordance with the provisions of that section, and shall, on the application of any shareholder or policy holder of the company, furnish to him a copy of such book, on payment of a sum not exceeding sixpence for every hundred words required to be copied.

Deed of settlement.

11.—Every assurance company which is not registered under the Companies Acts shall cause a sufficient number of copies of its deed of settlement or other instrument constituting the company to be printed, and shall, on the application of any shareholder or policy holder of the company, furnish to him a copy of such deed of settlement or other instrument on payment of a sum not exceeding one shilling.

Publication of authorised, subscribed, and paid-up capital.

12.—Where any notice, advertisement, or other official publication of an assurance company contains a statement of the amount of the authorised capital of the company, the publication shall also contain a statement of the amount of the capital which has been subscribed and the amount paid up.

Amalgamation or transfer.

13.—(1) Where it is intended to amalgamate two or more assurance companies, or to transfer the assurance business of any class from one assurance company to another company, the directors of any one or more of such companies may apply to the Court, by petition, to sanction the proposed arrangement.

(2) The Court, after hearing the directors and other persons whom it considers entitled to be heard upon the petition, may sanction the arrangement if it is satisfied that no sufficient objection to the arrangement has been established.

(3) Before any such application is made to the Court:

(*a*) notice of the intention to make the application shall be published in the *Gazette*; and

(*b*) a statement of the nature of the amalgamation or transfer, as the case may be, together with an abstract containing the material facts embodied in the agreement or deed under which the amalgamation or transfer is proposed to be effected, and copies of the actuarial or other reports upon which the agreement or deed is founded, including a report by an independent actuary, shall, unless the Court otherwise directs, be transmitted to each policy holder of each company in manner provided by section one hundred and thirty-six of the Companies Clauses Consolidation Act, 1845, for the transmission to shareholders of notices not requiring to be served personally: Provided that it shall not be necessary to transmit such statement and other documents to policy holders other than life, endowment, sinking fund, or bond investment policy holders, nor in the case of a transfer to such policy holders if the business transferred is not life assurance business or bond investment business ; and

(*c*) the agreement or deed under which the amalgamation or transfer is effected shall be open for the inspection of the policy holders and shareholders at the offices of the companies for a period of fifteen days after the publication of the notice in the *Gazette.*

(4) No assurance company shall amalgamate with another, or transfer its business to another, unless the amalgamation or transfer is sanctioned by the Court in accordance with this section.

14.—Where an amalgamation takes place between any assurance companies, or where any assurance business of one such company is transferred to another company, the combined company or the purchasing company, as the case may be, shall, within ten days from the date of the completion of the amalgamation or transfer, deposit with the Board of Trade : Statement in case of amalgamation or transfer.

(*a*) certified copies of statements of the assets and liabilities of the companies concerned in such amalgamation or transfer, together with a statement of the nature and terms of the amalgamation or transfer ; and

(*b*) a certified copy of the agreement or deed under which the amalgamation or transfer is effected ; and

(*c*) certified copies of the actuarial or other reports upon which that agreement or deed is founded ; and

(*d*) a declaration under the hand of the chairman of each company, and the principal officer of each company, that to the best of their belief every payment made or to be made to any person whatsoever on account of the amalgamation or transfer is therein fully set forth, and that no other payments beyond those set forth have been made or are to be made either in money, policies, bonds, valuable securities, or other property by or with the knowledge of any parties to the amalgamation or transfer.

15.—The Court may order the winding up of an assurance company, in accordance with the Companies (Consolidation) Act, 1908, and the provisions of that Act shall apply accordingly, subject, however, to the following modification : Special provisions as to winding up of assurance companies.

The company may be ordered to be wound up on the petition of ten or more policy holders owning policies of an aggregate value of not less than ten thousand pounds :

Provided that such a petition shall not be presented except by the leave of the Court, and leave shall not be granted until a *prima facie* case has been established to the satisfaction of the Court and until security for costs for such amount as the Court may think reasonable has been given.

16.—(1) Where the assurance business or any part of the assurance business of an assurance company has been transferred to another company under an arrangement in pursuance of which the first-mentioned company (in this section called the subsidiary company) or the creditors thereof has or have claims against the company to which such transfer was made (in this section called the principal company), then, if the principal company is being wound up by or under the supervision of the Court, the Court shall (subject as hereinafter mentioned) order the subsidiary company to be wound up in conjunction with the principal company, and may by the same or any subsequent order appoint the same person to be liquidator for the two companies, and make provision for such other matters as may Winding up of subsidiary companies.

seem to the Court necessary, with a view to the companies being wound up as if they were one company.

(2) The commencement of the winding up of the principal company shall, save as otherwise ordered by the Court, be the commencement of the winding up of the subsidiary company.

(3) In adjusting the rights and liabilities of the members of the several companies between themselves, the Court shall have regard to the constitution of the companies, and to the arrangements entered into between the companies, in the same manner as the Court has regard to the rights and liabilities of different classes of contributories in the case of the winding up of a single company, or as near thereto as circumstances admit.

(4) Where any company alleged to be subsidiary is not in process of being wound up at the same time as the principal company to which it is subsidiary, the Court shall not direct the subsidiary company to be wound up unless, after hearing all objections (if any) that may be urged by or on behalf of the company against its being wound up, the Court is of opinion that the company is subsidiary to the principal company, and that the winding up of the company in conjunction with the principal company is just and equitable.

(5) An application may be made in relation to the winding up of any subsidiary company in conjunction with a principal company by any creditor of, or person interested in, the principal or subsidiary company.

(6) Where a company stands in the relation of a principal company to one company, and in the relation of a subsidiary company to some other company, or where there are several companies standing in the relation of subsidiary companies to one principal company, the Court may deal with any number of such companies together or in separate groups, as it thinks most expedient, upon the principles laid down in this section.

Valuation of annuities and policies.

17.—(1) Where an assurance company is being wound up by the Court, or subject to the supervision of the Court, or voluntarily, the value of a policy of any class or of a liability under such a policy requiring to be valued in such winding up shall be estimated in manner applicable to policies and liabilities of that class provided by the Sixth Schedule to this Act.

(2) The rules in the Sixth and Seventh Schedules to this Act shall be of the same force, and may be repealed, altered, or amended, as if they were rules made in pursuance of section two hundred and thirty-eight of the Companies (Consolidation) Act, 1908, and rules may be made under that section for the purpose of carrying into effect the provisions of this Act with respect to the winding up of assurance companies.

Power to Court to reduce contracts.

18.—The Court, in the case of an assurance company which has been proved to be unable to pay its debts, may, if it thinks fit, reduce the amount of the contracts of the company upon such terms and subject to such conditions as the Court thinks just, in place of making a winding up order.

Extension of 8 Edw. 7, c. 69, s. 274, to all assurance companies established outside the United Kingdom.

19.—Section two hundred and seventy-four of the Companies (Consolidation) Act, 1908 (which contains provisions as to companies incorporated outside the United Kingdom), shall apply to every assurance company constituted outside the United Kingdom which carries on assurance business within the United Kingdom, whether incorporated or not.

Custody and inspection of documents deposited with Board of Trade.

20.—The Board of Trade may direct any documents deposited with them under this Act, or certified copies thereof, to be kept by the registrar or by any other officer of the Board of Trade; and any such documents and copies shall be open to inspection, and copies thereof may be procured by any person on payment of such fees as the Board of Trade may direct.

Evidence of documents.

21.—(1) Every document deposited under this Act with the Board of Trade, and certified by the registrar or by any person appointed in that behalf by the President of the Board of Trade to be a document so deposited, shall be deemed to be a document so deposited.

(2) Every document purporting to be certified by the registrar, or by any person appointed in that behalf by the President of the Board of Trade, to be a copy of a document so deposited shall be deemed to be a copy of that document, and shall be received in evidence as if it were the original document, unless some variation between it and the original document be proved.

Alteration of forms

22.—The Board of Trade may, on the application or with the consent of an assurance company, alter the forms contained in the schedules to this Act as respects that company, for the purpose of adapting them to the circumstances of that company.

Penalty for non-compliance with Act.

23.—Any assurance company which makes default in complying with any of the requirements of this Act shall be liable to a penalty not exceeding one hundred pounds, or, in the case of a continuing default, to a penalty not exceeding fifty pounds for every day during which the default continues, and every director, manager, or secretary, or other officer or agent of the company who is knowingly a party to the default shall be liable to a like penalty; and, if default continue for a period of three months after notice of default by the Board of Trade (which notice shall be published in one or more newspapers as the Board of Trade may, upon the application of one or more policy holders or shareholders, direct), the default shall be a ground on which the Court may order the winding up of the company, in accordance with the Companies (Consolidation) Act, 1908.

Penalty for falsifying statements, &c.

24.—If any account, balance sheet, abstract, statement, or other document required by this Act is false in any particular to the knowledge of any person who signs it, that person shall be guilty of a misdemeanour and shall be liable on conviction on indictment to fine and imprisonment, or on summary conviction to a fine not exceeding fifty pounds.

Recovery and application of penalties.

25.—Every penalty imposed by this Act shall be recovered and applied in the same manner as penalties imposed by the Companies (Consolidation) Act, 1908, are recoverable and applicable.

Service of notices.

26.—Any notice which is by this Act required to be sent to any policy holder may be addressed and sent to the person to whom notices respecting such policy are usually sent, and any notice so addressed and sent shall be deemed and taken to be notice to the holder of such policy:

Provided that where any person claiming to be interested in a policy has given to the company notice in writing of his interest, any notice which is by this Act required to be sent to policy holders shall also be sent to such person at the address specified by him in his notice.

Accounts, &c., to be laid before Parliament.

27.—The Board of Trade shall lay annually before Parliament the accounts, balance sheets, abstracts, statements, and other documents under this Act, or purporting to be under this Act, deposited with them during the preceding year, except reports on the affairs of assurance companies submitted to the shareholders or policy holders thereof, and may append to such accounts, balance sheets, abstracts, statements, or other documents any note of the Board of Trade thereon, and any correspondence in relation thereto.

Savings.

28.—(1) This Act shall not affect the National Debt Commissioners or the Postmaster-General, acting under the authorities vested in them respectively, by the Government Annuities Acts, 1829 to 1888, and the Post Office Savings Bank Acts, 1861 to 1908.

(2) This Act shall not apply to a member of Lloyd's, or of any other association of underwriters approved by the Board of Trade, who carries

on assurance business of any class, provided that he complies with the requirements set forth in the Eighth Schedule to this Act, and applicable to business of that class.

(3) Save as otherwise expressly provided by this Act, nothing in this Act shall apply to assurance business of any class other than one of the classes specified in section one of this Act, and a policy shall not be deemed to be a policy of fire insurance by reason only that loss by fire is one of the various risks covered by the policy.

Interpretation.

29.—In this Act, unless the context otherwise requires:

The expression "chairman" means the person for the time being presiding over the board of directors or other governing body of the assurance company;

The expression "annuities on human life" does not include superannuation allowances and annuties payable out of any fund applicable solely to the relief and maintenance of persons engaged or who have been engaged in any particular profession, trade, or employment, or of the dependants of such persons;

The expression "policy holder" means the person who for the time being is the legal holder of the policy for securing the contract with the assurance company;

The expression "underwriter" includes any person named in a policy or other contract of insurance as liable to pay or contribute towards the payment of the sum secured by such policy or contract;

The expression "financial year" means each period of twelve months at the end of which the balance of the accounts of the assurance company is struck, or, if no such balance is struck, then the calendar year;

The expression "Court" means the High Court of Justice in England, except that in the case of an assurance company registered or having its head office in Ireland it means, in the provisions of this Act, the High Court of Justice in Ireland, and in the case of an assurance company registered or having its head office in Scotland it means, in the provisions of this Act other than those relating to deposits, the Court of Session, in either division thereof;

The expression "Companies Acts" includes the Companies (Consolidation) Act, 1908, and any enactment repealed by that Act;

The expression "registrar" means the Registrar of Joint Stock Companies;

The expression "actuary" means an actuary possessing such qualifications as may be prescribed by rules made by the Board of Trade;

The expression "Gazette" means the London, Edinburgh, or Dublin Gazette, as the case may be.

Application to Special Classes of Business.

Application to life assurance companies.

30.—Where a company carries on life assurance business, this Act shall apply with respect to that business, subject to the following modifications:

(*a*) "Policy on human life" shall mean any instrument by which the payment of money is assured on death (except death by accident only) or the happening of any contingency dependent on human life, or any instrument evidencing a contract which is subject to payment of premiums for a term dependent on human life;

(*b*) Where the company grant annuities upon human life, "policy" shall include the instrument evidencing the contract to pay such an annuity, and "policy holder" includes annuitant;

(*c*) The obligation to deposit and keep deposited the sum of twenty thousand pounds shall apply notwithstanding that the company has previously made and withdrawn its deposit, or been exempted from making any deposit under any enactment hereby repealed ;

(*d*) Where the company intends to amalgamate with or to transfer its life assurance business to another assurance company, the Court shall not sanction the amalgamation or transfer in any case in which it appears to the Court that the life policy holders representing one-tenth or more of the total amount assured in the company dissent from the amalgamation or transfer ;

(*e*) Nothing in this Act providing that the life assurance fund shall not be liable for any contracts for which it would not have been liable had the business of the company been only that of life assurance shall affect the liability of that fund, in the case of a company established before the ninth day of August eighteen hundred and seventy, for contracts entered into by the company before that date ;

(*f*) In the case of a company carrying on life assurance business and established before the ninth day of August eighteen hundred and seventy, by the terms of whose deed of settlement the whole of the profits of all the business carried on by the company are paid exclusively to the life policy holders, and on the face of whose life policies the liability of the life assurance fund in respect of the other business distinctly appears, such of the provisions of this Act as require the separation of funds, and exempt the life assurance fund from liability for contracts to which it would not have been liable had the business of the company been only that of life assurance, shall not apply ;

(*g*) Any business carried on by an assurance company which under the provisions of any special Act relating to that company is to be treated as life assurance business shall continue to be so treated, and shall not be deemed to be other business or a separate class of assurance business within the meaning of this Act ;

(*h*) In the case of a mutual company whose profits are allocated to members wholly or mainly by annual abatements of premium, the abstract of the report of the actuary on the financial condition of the company, prepared in accordance with the Fourth Schedule to this Act, may, notwithstanding anything in section five of this Act, be made and returned at intervals not exceeding five years, provided that, where such return is not made annually, it shall include particulars as to the rates of abatement of premiums applicable to different classes or series of assurances allowed in each year during the period which has elapsed since the previous return under the Fourth Schedule.

31.—Where a company carries on fire insurance business, this Act shall apply with respect to that business, subject to the following modifications : Application to fire insurance companies.

(*a*) It shall not be necessary for the company to prepare any statement of its fire insurance business in accordance with the Fourth and Fifth Schedules to this Act ;

(*b*) Such of the provisions of this Act as relate to deposits to be made under this Act shall not apply with respect to the fire insurance business carried on by the company if the company has commenced to carry on that business within the United Kingdom before the passing of this Act ;

(*c*) Such of the provisions of this Act as relate to deposits to be made under this Act shall not apply where the company is an association of owners or occupiers of buildings or other property which satisfies the Board of Trade that it is carrying on, or is about to carry on, business wholly or mainly for the purpose of the mutual insurance of its members against damage by or incidental to fire caused to the houses or other property owned or occupied by them ;

(*d*) It shall not be necessary to make a deposit in respect of fire insurance business where the company has made a deposit in respect of any other class of assurance business, and, where a company, having made a deposit in respect of fire insurance business, commences to carry on life assurance business or employers' liability insurance business, the company may transfer the deposit so made to the account of that other business, and after such transfer the deposit shall be treated as if it had been made in respect of such other business ;

(*e*) So much of this Act as requires an assurance company transacting other business besides assurance business, or more than one class of assurance business, to keep separate funds into which all receipts in respect of the assurance business or of each class of assurance business are to be paid shall not apply as respects fire insurance business ;

(*f*) The provisions of this Act with respect to the amalgamation of companies shall not apply where the only classes of assurance business carried on by both of the companies are fire insurance business, or fire insurance business and accident insurance business, and the provisions of this Act with respect to the transfer of assurance business from one company to another shall not apply to fire insurance business.

Application to accident insurance companies.

32.—Where a company carries on accident insurance business, this Act shall apply with respect to that business, subject to the following modifications :

(*a*) In lieu of the provisions of sections five and six of this Act the following provisions shall be substituted :

" The company shall annually prepare a statement of its accident insurance business in the form set forth in the Fourth Schedule to this Act and applicable to accident insurance business, and the statement shall be printed, signed, and deposited at the Board of Trade in accordance with section seven of this Act " ;

(*b*) Such of the provisions of this Act as relate to deposits to be made under this Act shall not apply with respect to the accident insurance business carried on by the company if the company has commenced to carry on that business in the United Kingdom before the passing of this Act ;

(*c*) It shall not be necessary to make or keep a deposit in respect of accident insurance business where the company has made a deposit in respect of any other class of assurance business, and, where a company, having made a deposit in respect of accident insurance business, commences to carry on life assurance business or employers' liability insurance business, the company may transfer the deposit so made to the account of that other business, and after such transfer the deposit shall be treated as if it had been made in respect of such other business ;

(*d*) So much of this Act as requires an assurance company transacting other business besides assurance business, or more than one class of assurance business, to keep separate funds into which all receipts in respect of the assurance business or of each class of assurance business are to be paid shall not apply as respects accident insurance business ;

(*e*) The provisions of this Act with respect to the amalgamation of companies shall not apply where the only classes of assurance business carried on by both of the companies are accident insurance business, or accident insurance business and fire insurance business, and the provisions of this Act with respect to the transfer of assurance business from one company to another shall not apply to accident insurance business;

(*f*) The expression " policy " includes any policy under which there is for the time being an existing liability already accrued, or under which a liability may accrue;

(*g*) Where a sum is due, or a weekly or other periodical payment is payable, under any policy, the expression " policy holder " includes the person to whom the sum is due or the weekly or other periodical payment payable.

33.—(1) Where a company carries on employers' liability insurance business, this Act shall apply with respect to that business, subject to the following modifications: **Application to employers liability insurance companies.**

(*a*) This Act shall not apply where the company is an association of employers which satisfies the Board of Trade that it is carrying on, or is about to carry on, business wholly or mainly for the purpose of the mutual insurance of its members against liability to pay compensation or damages to workmen employed by them, either alone or in conjunction with insurance against any other risk incident to their trade or industry;

(*b*) This Act shall not apply where the company carries on the employers' liability insurance business as incidental only to the business of marine insurance by issuing marine policies, or policies in the form of marine policies, covering liability to pay compensation or damages to workmen as well as losses incident to marine adventure or adventure analogous thereto;

(*c*) In lieu of the provisions of sections five and six of this Act the following provisions shall be substituted:

" The company shall annually prepare a statement of its employers' liability insurance business in the form set forth in the Fourth Schedule to this Act and applicable to employers' liability insurance business, and shall cause an investigation of its estimated liabilities to be made by an actuary so far as may be necessary to enable the provisions of that form to be complied with, and the statement shall be printed, signed, and deposited at the Board of Trade in accordance with section seven of this Act ";

(*d*) Such of the provisions of this Act as relate to deposits to be made under this Act shall not apply with respect to the employers' liability insurance business carried on by a company where the company had commenced to carry on that business within the United Kingdom before the twenty-eighth day of August nineteen hundred and seven;

(*e*) As soon as the employers' liability fund set apart and secured for the satisfaction of the claims of policy holders of that class amounts to forty thousand pounds, the Paymaster-General shall, if the company has made a deposit in respect of any other class of assurance business, return to the company the money deposited in respect of its employers' liability insurance business, and it shall not thereafter be necessary for the company to keep any sum deposited in respect of that business, so long as the sum deposited in respect of any other class of assurance business is kept deposited;

of owners or occupiers of buildings or other property which satisfies the Board of Trade that it is carrying on, or is about to carry on, business wholly or mainly for the purpose of the mutual insurance of its members against damage by or incidental to fire caused to the houses or other property owned or occupied by them ;

(*d*) It shall not be necessary to make a deposit in respect of fire insurance business where the company has made a deposit in respect of any other class of assurance business, and, where a company, having made a deposit in respect of fire insurance business, commences to carry on life assurance business or employers' liability insurance business, the company may transfer the deposit so made to the account of that other business, and after such transfer the deposit shall be treated as if it had been made in respect of such other business ;

(*e*) So much of this Act as requires an assurance company transacting other business besides assurance business, or more than one class of assurance business, to keep separate funds into which all receipts in respect of the assurance business or of each class of assurance business are to be paid shall not apply as respects fire insurance business ;

(*f*) The provisions of this Act with respect to the amalgamation of companies shall not apply where the only classes of assurance business carried on by both of the companies are fire insurance business, or fire insurance business and accident insurance business, and the provisions of this Act with respect to the transfer of assurance business from one company to another shall not apply to fire insurance business.

Application to accident insurance companies.

32.—Where a company carries on accident insurance business, this Act shall apply with respect to that business, subject to the following modifications :

(*a*) In lieu of the provisions of sections five and six of this Act the following provisions shall be substituted :

" The company shall annually prepare a statement of its accident insurance business in the form set forth in the Fourth Schedule to this Act and applicable to accident insurance business, and the statement shall be printed, signed, and deposited at the Board of Trade in accordance with section seven of this Act " ;

(*b*) Such of the provisions of this Act as relate to deposits to be made under this Act shall not apply with respect to the accident insurance business carried on by the company if the company has commenced to carry on that business in the United Kingdom before the passing of this Act ;

(*c*) It shall not be necessary to make or keep a deposit in respect of accident insurance business where the company has made a deposit in respect of any other class of assurance business, and, where a company, having made a deposit in respect of accident insurance business, commences to carry on life assurance business or employers' liability insurance business, the company may transfer the deposit so made to the account of that other business, and after such transfer the deposit shall be treated as if it had been made in respect of such other business ;

(*d*) So much of this Act as requires an assurance company transacting other business besides assurance business, or more than one class of assurance business, to keep separate funds into which all receipts in respect of the assurance business or of each class of assurance business are to be paid shall not apply as respects accident insurance business ;

(*e*) The provisions of this Act with respect to the amalgamation of companies shall not apply where the only classes of assurance business carried on by both of the companies are accident insurance business, or accident insurance business and fire insurance business, and the provisions of this Act with respect to the transfer of assurance business from one company to another shall not apply to accident insurance business ;

(*f*) The expression " policy " includes any policy under which there is for the time being an existing liability already accrued, or under which a liability may accrue ;

(*g*) Where a sum is due, or a weekly or other periodical payment is payable, under any policy, the expression " policy holder " includes the person to whom the sum is due or the weekly or other periodical payment payable.

33.—(1) Where a company carries on employers' liability insurance business, this Act shall apply with respect to that business, subject to the following modifications : Application to employers liability insurance companies.

(*a*) This Act shall not apply where the company is an association of employers which satisfies the Board of Trade that it is carrying on, or is about to carry on, business wholly or mainly for the purpose of the mutual insurance of its members against liability to pay compensation or damages to workmen employed by them, either alone or in conjunction with insurance against any other risk incident to their trade or industry ;

(*b*) This Act shall not apply where the company carries on the employers' liability insurance business as incidental only to the business of marine insurance by issuing marine policies, or policies in the form of marine policies, covering liability to pay compensation or damages to workmen as well as losses incident to marine adventure or adventure analogous thereto ;

(*c*) In lieu of the provisions of sections five and six of this Act the following provisions shall be substituted :

" The company shall annually prepare a statement of its employers' liability insurance business in the form set forth in the Fourth Schedule to this Act and applicable to employers' liability insurance business, and shall cause an investigation of its estimated liabilities to be made by an actuary so far as may be necessary to enable the provisions of that form to be complied with, and the statement shall be printed, signed, and deposited at the Board of Trade in accordance with section seven of this Act " ;

(*d*) Such of the provisions of this Act as relate to deposits to be made under this Act shall not apply with respect to the employers' liability insurance business carried on by a company where the company had commenced to carry on that business within the United Kingdom before the twenty-eighth day of August nineteen hundred and seven ;

(*e*) As soon as the employers' liability fund set apart and secured for the satisfaction of the claims of policy holders of that class amounts to forty thousand pounds, the Paymaster-General shall, if the company has made a deposit in respect of any other class of assurance business, return to the company the money deposited in respect of its employers' liability insurance business, and it shall not thereafter be necessary for the company to keep any sum deposited in respect of that business, so long as the sum deposited in respect of any other class of assurance business is kept deposited ;

(*f*) Where money is paid into a county court under the provisions of the Eighth Schedule to this Act, the Court shall (unless the Court for special reason sees fit to direct otherwise) order the lump sum to be invested or applied in the purchase of an annuity or otherwise, in such manner that the duration of the benefit thereof may, as far as possible, correspond with the probable duration of the incapacity ;

(*g*) The expression " policy " includes any policy under which there is for the time being an existing liability already accrued, or under which any liability may accrue ;

(*h*) Where any sum is due, or a weekly payment is payable, under any policy, the expression " policy holder " includes the person to whom the sum is due or the weekly payment payable ;

(*i*) If the company carries on employers' liability insurance business outside the United Kingdom, that business shall not be treated as part of the employers' liability insurance business carried on by the company for the purposes of this Act.

(2) In the application of this section to Scotland the expression " county court " means sheriff court.

Application to bond investment companies.

34.—Where a company carries on bond investment business, this Act shall apply with respect to that business, subject to the following modifications :

(*a*) The expression " policy " includes any bond, certificate, receipt, or other instrument evidencing the contract with the company, and the expression " policy holder " means the person who for the time being is the legal holder of such instrument ;

(*b*) Such of the provisions of this Act as relate to deposits shall not apply with respect to the bond investment business carried on by the company, if the company has commenced to carry on that business in the United Kingdom before the passing of this Act ;

(*c*) As soon as the bond investment fund set apart and secured for the satisfaction of the claims of the policy holders of that class amounts to forty thousand pounds, the Paymaster-General shall, if the company has made a deposit in respect of any other class of assurance business, return to the company the money deposited in respect of its bond investment business, and it shall not thereafter be necessary for the company to keep any sum deposited in respect of that business, so long as the sum deposited in respect of any other class of business is kept deposited ;

(*d*) The first statement of the bond investment business of the company shall be deposited at the Board of Trade on or before the thirtieth day of June nineteen hundred and eleven ;

(*e*) The company shall not give the holder of any policy issued after the passing of this Act any advantage dependent on lot or chance, but this provision shall not be construed as in anywise prejudicing any question as to the application to any such transaction, whether in respect of a policy issued before or after the passing of this Act, of the law relating to lotteries.

Power of Board of Trade to exempt unregistered trade unions and friendly societies.

35.—The Board of Trade may, on the application of any unregistered trade union originally established more than twenty years before the commencement of this Act, extend to the trade union the exemption conferred by this Act on registered trade unions, and may on the application of an unregistered friendly society extend to the society the exemption conferred by this Act on registered friendly societies if it appears to the Board, after consulting the Chief Registrar of Friendly Societies, that the society is one to which it is inexpedient that the provisions of this Act should apply.

Provisions as to Collecting Societies and Industrial Assurance Companies.

36.—(1) Amongst the purposes for which collecting societies and industrial assurance companies may issue policies of assurance there shall be included insuring money to be paid for the funeral expenses of a parent, grandparent, grandchild, brother, or sister. Provisions as to collecting societies and industrial assurance companies.

(2) No policy effected before the passing of this Act with a collecting society or industrial assurance company shall be deemed to be void by reason only that the person effecting the policy had not, at the time the policy was effected, an insurable interest in the life of the person assured, or that the name of the person interested, or for whose benefit or on whose account the policy was effected, was not inserted in the policy, or that the insurance was not one authorised by the Acts relating to friendly societies, if the policy was effected by or on account of a person who had at the time a *bonâ fide* expectation that he would incur expenses in connection with the death or funeral of the assured, and if the sum assured is not unreasonable for the purpose of covering those expenses, and any such policy shall enure for the benefit of the person for whose benefit it was effected or his assigns.

(3) Any collecting society or industrial insurance company which, after the passing of this Act, issues policies of insurance which are not within the legal powers of such society or company shall be held to have made default in complying with the requirements of this Act; and the provisions of this Act with respect to such default shall apply to collecting societies, industrial insurance companies, and their officers, in like manner as they apply to assurance companies and their officers.

(4) Without prejudice to the powers conferred by section seventy-one of the Friendly Societies Act, 1896, the committee of management or other governing body of a collecting society having more than one hundred thousand members may petition the court to make an order for the conversion of the society into a mutual company under the Companies (Consolidation) Act, 1908, and the court may make such an order if, after hearing the committee of management, or other governing body, and other persons whom the court considers entitled to be heard on the petition, the court is satisfied, on a poll being taken, that fifty-five per cent. at least of the members of the society over sixteen years of age agree to the conversion; and the court may give such directions as it thinks fit for settling a proper memorandum and articles of association of the company; but, before any such petition is presented to the court, notice of intention to present the petition shall be published in the *Gazette*, and in such newspapers as the court may direct. 59 & 60 Vict. c. 25.

When a collecting society converts itself into a company in accordance with the provisions of this subsection, subsection (3) of section seventy-one of the Friendly Societies Act, 1896, shall apply in like manner as if the conversion were effected under that section.

(5) In this section the expressions "collecting society" and "industrial assurance company" have the same meanings as in the Collecting Societies and Industrial Assurance Companies Act, 1896. 59 & 60 Vict. c. 26.

Supplemental.

37.—The enactments mentioned in the Ninth Schedule to this Act are hereby repealed to the extent specified in the third column of that schedule: Repeal.

Provided that nothing in this repeal shall affect any investigation made, or any statement, abstract, or other document deposited, under any enactment hereby repealed, but every such investigation shall be deemed to have been made and every such document prepared and deposited under this Act.

38.—(1) This Act may be cited as the Assurance Companies Act, 1909. Short title and commencement.

(2) This Act shall come into operation on the first day of July nineteen hundred and ten, except that as respects section thirty-six it shall come into operation on the passing thereof.

FIRST SCHEDULE.

N.B.—Where marine insurance business or sinking fund or capital redemption insurance business is carried on, the income and expenditure thereof to be stated in like manner in separate accounts. Any additional businesses (including employers' liability insurance business transacted out of the United Kingdom) to be shown in a separate inclusive general account.

SCHEDULE I.—FORM A. [LIFE BUSINESS.]

Revenue Account of the..............................for the Year ending..............................in respect of Life Assurance Business.

—	Business within the United Kingdom.	Business out of the United Kingdom.	Total.	—	Business within the United Kingdom.	Business out of the United Kingdom.	Total.
	£ s. d.	£ s. d.	£ s. d.		£ s. d.	£ s. d.	£ s. d.
Amount of life assurance fund at the beginning of the year	—	—		Claims under policies paid and outstanding:—			
Premiums:—				By death . . .			
				By maturity . .			
Consideration for annuities granted				Surrenders, including surrenders of bonus . .			
				Annuities . . .			
Interest, dividends, and rents . . (£ s. d.)				Bonuses in cash . .			
				Bonuses in reduction of premiums . . .			
				Commission . . .			
				Expenses of management .	—	—	
Less income tax thereon . .	—	—		Other payments (accounts to be specified) . . .	—	—	
Other receipts (accounts to be specified) . . .	—	—		Amount of life assurance fund at the end of the year, as per Third Schedule	—	—	
£				£			

NOTE 1.—Companies having separate accounts for annuities to return the particulars of their annuity business in a separate statement.

NOTE 2.—Companies having both Ordinary and Industrial branches to return the particulars of the business in each department separately.

NOTE 3.—Items in this Account to be net amounts after deduction of the amounts paid and received in respect of re-assurances of the Company's risks.

NOTE 4.—If any sum has been deducted from the Expenses of management account, and taken credit for in the Balance Sheet as an asset, the sum so deducted to be separately shown in the above Account.

NOTE 5.—Particulars of the new life assurances effected during the year of account to be appended to the above Account showing separately, as respects business within and business out of the United Kingdom, the number of policies, the total sums assured, the amount received by way of single premiums, and the amount of the yearly renewal premium income, the items to be net amounts after deduction of the amounts paid and received in respect of re-assurances of the company's risks. The particulars as to yearly renewal premium income need not be furnished in respect of Industrial business.

NOTE 6.—The columns headed "Business out of the United Kingdom," in the case of companies having their head office in the United Kingdom, apply only to business secured through Branch Offices or Agencies out of the United Kingdom.

SCHEDULE I.—FORM B. [Fire Business.]

Revenue Account of the .... for the Year ending .... 19...... in respect of Fire Insurance Business.

	£ s. d.	£ s. d.		£ s. d.	£ s. d.
Amount of fire insurance fund at the beginning of the year:—			Claims under policies paid and outstanding .		
			Commission		
Reserve for unexpired risks .			Expenses of management		
Additional reserve (if any) .			Contributions to fire brigades . . .		
			Other payments (accounts to be specified) .		
Premiums				£ s. d.	
	£ s. d.				
Interest, dividends, and rents .			Amount of fire insurance fund at the end of the year, as per Third Schedule:—		
Less income tax thereon .			Reserve for unexpired risks being per-cent of premium income for the year		
			Additional reserve (if any)		
Other receipts (accounts to be specified) .					
£			£		

Note 1.—Items in this Account to be the net amounts after deduction of the amounts paid and received in respect of re-insurances of the Company's risks.

Note 2.—If any sum has been deducted from the Expenses of management account, and taken credit for in the Balance Sheet as an asset, the sum so deducted to be separately shown in the above Account.

SCHEDULE I.—FORM C. [ACCIDENT BUSINESS.]

Revenue Account of the................for the Year ending.................19..... in respect of Accident Insurance Business.

		£ s. d.	£ s. d.			£ s. d.	£ s. d.
	Amount of accident insurance fund at the beginning of the year:—				Payments under policies, including medical and legal expenses in connection therewith .		
	Reserve for unexpired risks				Commission		
	Total estimated liability in respect of outstanding claims				Expenses of management		
	Additional reserve (if any) .				Other payments (accounts to be specified) .		
	Premiums				Amount of accident insurance fund at the end of the year as per Third Schedule:—		
	Interest, dividends, and rents .				Reserve for unexpired risks being per-cent of premium income for the year		
	Less income tax thereon .				Total estimated liability in respect of outstanding claims, as per Fourth Schedule (C)		
	Other receipts (accounts to be specified) . .				Additional reserve (if any) .		
		£				£	

NOTE 1.—Items in this Account to be the net amounts after deduction of the amounts paid and received in respect of re-insurances of the Company's risks.

NOTE 2.—If any sum has been deducted from the Expenses of management account, and taken credit for in the Balance Sheet as an asset, the sum so deducted to be separately shown in the above Account.

SCHEDULE I.—FORM D. [EMPLOYERS' LIABILITY BUSINESS.]

Revenue Account of the...........for the Year ending...........19......in respect of Employers' Liability Insurance Business transacted within the United Kingdom.

		£ s. d.	£ s. d.
	Amount of employers' liability insurance fund at the beginning of the year:—		
	Reserve for unexpired risks		
	Total estimated liability in respect of outstanding claims		
	Additional reserve (if any) .		
	Premiums		
		£ s. d.	
	Interest, dividends, and rents .		
	Less income tax thereon . .		
	Other receipts (accounts to be specified) . .		
	£		

		£ s. d.	£ s. d.
	Payments under policies, including medical and legal expenses in connection therewith .		
	Commission		
	Expenses of management		
	Other payments (accounts to be specified) .		
	Amount of employers' liability insurance fund at the end of the year, as per Third Schedule:—	£ s. d.	
	Reserved for unexpired risks, being per-cent of premium income for the year		
	Total estimated liability in respect of outstanding claims, as per Fourth Schedule (D) . . .		
	Additional reserve (if any) .		
	£		

NOTE 1.—Items in this Account to be the net amounts after deduction of the amounts paid and received in respect of re-insurances of the Company's risks.

NOTE 2.—If any sum has been deducted from the Expenses of management account, and taken credit for in the Balance Sheet as an asset, the sum so deducted to be separately shown in the above Account.

SCHEDULE I.—FORM E. [Bond Investment Business.]

Revenue Account of the............for the Year ending............19......in respect of Bond Investment and Endowment Certificate Business.

	£ s. d.	£ s. d.		£ s. d.	£ s. d.
Amount of bond investment and endowment certificate fund at the beginning of the year .			Claims under bonds and certificates, paid and outstanding		
Additional reserve (if any) . .			Commission		
Premiums			Expenses of management		
Interest, dividends, and rents .	£ s. d.		Other payments (accounts to be specified) .		
Less income tax thereon .			Amount of bond investment and endowment certificate fund at the end of the year, as per Third Schedule	£ s. d.	
Other receipts (accounts to be specified) .			Additional reserve (if any) . .		
£			£		

Note 1.—Items in this Account to be the net amounts after deduction of the amounts paid and received in respect of re-insurances of the Company's risks.

Note 2.—If any sum has been deducted from the Expenses of management account, and taken credit for in the Balance Sheet as an asset, the sum so deducted to be separately shown in the above Account.

Section 4.

SCHEDULE II.

Profit and Loss Account of the..for the Year ending.......................19......

		£ s. d.		£ s. d.
Balance of last year's account			Dividends and bonuses to shareholders . .	
Interest and dividends not carried to other accounts	£ s. d.		Expenses not charged to other accounts . .	
Less income tax thereon . .			Loss realised (accounts to be specified) . .	
Profit realised (accounts to be specified) . .			Other payments (accounts to be specified) . .	
Other receipts (accounts to be specified) . .			Balance as per Third Schedule	
£			£	

Section 4.

SCHEDULE III.

Balance Sheet of the..on the..19......

Liabilities.		£ s. d.
Shareholders' capital paid up (if any)	£	
Life assurance funds* :—		
Ordinary branch		
Industrial do.		
Annuity fund*		
Fire insurance fund		
Accident insurance fund		
Employers' liability insurance fund		
Bond investment and endowment certificate fund		
Marine insurance fund		
Sinking fund and capital redemption fund		
Profit and loss account		
Other funds (if any) to be specified		
	£	
Claims admitted or intimated but not paid† :		
Life assurance		
Fire insurance		
Bond investment		
Annuities due and unpaid†		
Other sums owing by the company† (to be stated separately under each class of business).		
	£	

Assets.	£ s. d.
Mortgages on property within the United Kingdom	
Do. do. out of the United Kingdom	
Loans on parochial and other public rates	
Do. Life interests	
Do. Reversions	
Do. Stocks and shares	
Do. Company's policies within their surrender values	
Do. Personal security	
Investments :	
Deposit with the High Court (securities to be specified)	
British Government securities	
Municipal and county securities, United Kingdom	
Indian and Colonial Government securities	
Do. provincial securities	
Do. municipal do.	
Foreign Government securities	
Do. provincial securities	
Do. municipal do.	
Railway and other debentures and debenture stocks—Home and Foreign	
Railway and other preference and guaranteed stocks	
Do. ordinary stocks	
Rent charges	
Freehold ground rents	
Leasehold do.	
House property	
Life interests	
Reversions	
Agents' balances	
Outstanding premiums†	
Do. interest, dividends, and rents†	
Interest accrued but not payable†	
Bills receivable	
Cash :	
On deposit	
In hand and on current account	
Other assets (to be specified)	
£	

* Life companies having separate annuity fund to show amount thereof separately.

† These items are or have been included in the corresponding items in the First Schedule.

NOTE 1.—When part of the assets of the company are specifically deposited, under local laws, in various places out of the United Kingdom, as security to holders of policies there issued, each such place and the amount compulsorily lodged therein must be specified in respect of each class of business, except that, in the case of fire, accident or employers' liability insurance business, it shall be sufficient to state the fact that a part of the assets has been so deposited.

NOTE 2.—A Balance Sheet in the above form must be rendered in respect of each separate fund for which separate investments are made.

NOTE 3.—The Balance Sheet must state how the values of the Stock Exchange securities are arrived at, and a certificate must be appended, signed by the same persons as sign the Balance Sheet, to the effect that in their belief the assets set forth in the Balance Sheet are in the aggregate fully of the value stated therein, less any investment reserve fund taken into account. In the case of a company transacting life assurance business or bond investment business, this certificate is to be given on the occasions only when a statement respecting valuation under the Fourth Schedule is made.

NOTE 4.—In the case of a company required to keep separate funds under section 3 of this Act, a certificate must be appended, signed by the same persons as signed the Balance Sheet and by the auditor, to the effect that no part of any such fund has been applied, directly or indirectly, for any purpose other than the class of business to which it is applicable.

SCHEDULE IV.

N.B.—Where sinking fund or capital redemption insurance business is carried on, a separate statement signed by the actuary must be furnished, showing the total number of policies valued, the total sums assured, and the total office yearly premiums, and also showing the total net liability in respect of such business and the basis on which such liability is calculated. Sections [illegible], and [illegible].

(A).—*Form applicable to Life Assurance Business.*

STATEMENT respecting the VALUATIONS of the LIABILITIES under LIFE POLICIES and ANNUITIES of the , to be made and signed by the ACTUARY.

(The answers should be numbered to accord with the numbers of the corresponding questions.)

1. The date up to which the valuation is made.

2. The general principles adopted in the valuation, and the method followed in the valuation of particular classes of assurances, including a statement of the method by which the net premiums have been arrived at, and whether these principles were determined by the instrument constituting the company, or by its regulations or byelaws, or how otherwise; together with a statement of the manner in which policies on under average lives are dealt with.

3. The table or tables of mortality used in the valuation. In cases where the tables employed are not published, specimen policy values are to be given, at the rate of interest employed in the valuation, in respect of whole-life assurance policies effected at the respective ages of 20, 30, 40, and 50, and having been respectively in force for five years, ten years, and upwards at intervals of five years respectively; with similar specimen policy values in respect of endowment assurance policies, according to age at entry, original term of policy, and duration.

4. The rate or rates of interest assumed in the calculations.

5. The actual proportion of the annual premium income, if any, reserved as a provision for future expenses and profits, separately specified in respect of assurances with immediate profits, with deferred profits, and without profits. (If none, state how this provision is made.)

6. The consolidated revenue account since the last valuation, or, in case of a company which has made no valuation, since the commencement of the business. (This return should be made in the form annexed. No return under this heading will be required where a statement under this schedule is deposited annually.)

7. The liabilities of the company under life policies and annuities at the date of the valuation, showing the number of policies, the amount assured, and the amount of premiums payable annually under each class of policies, both with and without participation in profits; and also the net liabilities and assets of the company, with the amount of surplus or deficiency. (These returns to be made in the forms annexed.)

8. The principles upon which the distribution of profits among the shareholders and policy holders is made, and whether these principles were determined by the instrument constituting the company or by its regulations or byelaws or how otherwise, and the number of years' premiums to be paid before a bonus (*a*) is allotted, and (*b*) vests.

9. The results of the valuation, showing—

(1) The total amount of profit made by the company, allocated as follows:

(a) Among the policyholders with immediate participation, and the number and amount of the policies which participated;

(b) Among policy holders with deferred participation, and the number and amount of the policies which participated;

(c) Among the shareholders;

(d) To reserve funds, or other accounts;

(e) Carried forward unappropriated.

(2) Specimens of bonuses allotted to whole-life assurance policies for £100 effected at the respective ages of 20, 30, 40, and 50, and having been respectively in force for five years, ten years, and upwards at intervals of five years respectively, together with the amounts apportioned under the various modes in which the bonus might be received; with similar specimen bonuses and particulars in respect of endowment assurance policies, according to age at entry, original term of policy and, duration.

NOTE.—Separate statements to be furnished throughout in respect of Ordinary and Industrial business respectively, the basis of the division being stated.

(FORM referred to under Heading No. 6 in Schedule IV. (A).)

Consolidated Revenue Account of the..for......................years commencing...................................and ending...................................

	£ s. d.		£ s. d.
Amount of life assurance fund at the beginning of the period		Claims under policies paid and outstanding .	
		£ s. d.	
Premiums		By death	
Consideration for annuities granted . . .		By maturity . . .	
£ s. d.		Surrenders	
Interest, dividends, and rents . .		Annuities	
Less income tax thereon . .		Bonuses in cash	
Other receipts (accounts to be specified) . .		" " reduction of premiums . . .	
		Commission	
		Expenses of management	
		Other payments (accounts to be specified) .	
		Amount of life assurance fund at the end of the period, as per Third Schedule . . .	
£		£	

NOTE.—If any sum has been deducted from the expenses of management account and taken credit for in the Balance Sheet as an asset, the sum so deducted to be separately shown in the above statement.

(FORM referred to under Heading No. 7 in Schedule IV. (A).)

SUMMARY and VALUATION of the POLICIES of the.....................................as at...........................19......

Description of Transactions.	Particulars of the POLICIES for Valuation.				VALUATION. Value by the Table, Interest per cent.			
	Number of Policies.	Sums assured and Bonuses.	Office Yearly Premiums.	Net Yearly Premiums.	Sums assured and Bonuses.	Office Yearly Premiums.	Net Yearly Premiums.	Net Liability.
ASSURANCES.								
I.—*With immediate participation in profits.*								
For whole term of life - - - - - -								
Other classes (to be specified) - - - -								
Extra premiums payable - - - - -								
II.—*With deferred participation in profits.*								
For whole term of life - - - - - -								
Other classes (to be specified) - - - -								
Extra premiums payable - - - - -								
Total assurances with profits - -								
III.—*Without participation in profits.*								
For whole term of life - - - - - -								
Other classes (to be specified) - - - -								
Extra premiums payable - - - - -								
Total assurances without profits - - -								
Total assurances - - - - - -								
Deduct re-assurances (to be specified according to class in a separate statement).								
Net amount of assurances - - - -								
Adjustments, if any (to be separately specified)								
ANNUITIES ON LIVES.								
Immediate - - - - - - - -								
Other classes (to be specified) - - - -								
Total of the results - - - - - -								

NOTE 1.—The term "extra premium" in this Act shall be taken to mean the charge for any risk not provided for in the minimum contract premium. If policies are issued in or for any country at rates of premium deduced from tables other than the European mortality tables adopted by the company, separate schedules similar in form to the above must be furnished.

NOTE 2.—Separate returns and valuation results must be furnished in respect of classes of policies valued by different tables of mortality, or at different rates of interest, also for business at other than European rates.

NOTE 3.—In cases also where separate valuations of any portion of the business are required under local laws in places outside the United Kingdom, a summary statement must be furnished in respect of the business so valued in each such place showing the total number of policies, the total sums assured and bonuses, the total office yearly premiums, and the total net liability on the bases as to mortality and interest adopted in each such place, with a statement as to such bases respectively.

(FORM referred to under Heading No. 7 in Schedule IV. (A).)

VALUATION BALANCE SHEET of as at 19

Dr.	£	Cr.	£
To net liability under Life Assurance and Annuity transactions (as per summary statement provided in Fourth Schedule (A))		By Life Assurance and Annuity Funds (as per Balance sheet under Schedule 3) . .	
To surplus, if any		By deficiency, if any	

(C).—*Form applicable to Accident Insurance Business.*

STATEMENT of the ESTIMATED LIABILITY in respect of OUTSTANDING CLAIMS arising in the year of Account, and in the preceding year or years; computed as at the end of the year in which the claims arose, and as at the end of the year of Account; with particulars as to the number and amount of the claims actually paid in the intervening period.

I.—Claims arising during the year of account ending , 19 .

(*a*) Particulars as to Claims arising, and settled, during the year of Account:—

Class of Claim. (1)	No. of Claims. (2)	Total amount paid.	
		By Sums insured. (3)	By Weekly Allowance. (4)
(i) Fatal claims			
(ii) Non-fatal claims			
Totals			

(*b*) Particulars as to Claims arising during and outstanding at the end of the year of Account:—

Class of Claim. (1)	No. of Claims. (2)	Amount paid during Year of Account. (3)	Estimated Liability. (4)
(i) Fatal claims			
(ii) Non-fatal claims, involving payment of sums insured			
(iii) Non-fatal claims, involving payment of temporary weekly allowances:—			
With maximum duration, not exceeding 26 weeks ...			
With maximum duration, exceeding 26 weeks, but not exceeding 52 weeks			
And so on, at intervals of 26 weeks, up to the longest period over which temporary weekly allowances are granted			
(iv) Non-fatal claims, involving payment of yearly allowances during permanent total disablement...			
Totals			

II.—Outstanding Claims which arose during the *first year* preceding the year of account ending , 19 .

Particulars of Claims. (1)	Estimated Liability in respect of Claims outstanding as at the above date. (2)		Claims paid during the Period of One Year between the above Date and the End of Year of Account. Terminated within such Period. (3)		Claims paid during the Period of One Year between the above Date and the End of Year of Account. Not terminated within such Period. (4)		Estimated Liability in respect of Claims outstanding as at the End of Year of Account. (5)		Totals of Columns (3), (4), and (5). (6)	
	No.	Amount	No.	Amount	No.	Amount	No.	Amount	No.	Amount
(i) Fatal claims . .										
(ii) Non-fatal claims, involving payment of sums insured. . .										
(iii) Non-fatal claims, involving payment of temporary weekly allowances :—										
With maximum duration not exceeding 26 weeks										
With maximum duration exceeding 26 weeks, but not exceeding 52 weeks										
And so on, at intervals of 26 weeks, up to the longest period over which temporary weekly allowances are granted										
(iv) Non-fatal claims involving payment of yearly allowances during permanent total disablement . . .										
Totals . .										

NOTE.—If temporary weekly allowances are granted by the Company for periods exceeding 52 weeks, particulars are to be furnished, in a form or forms similar to II. above, showing, in respect of claims involving such extended allowances, the estimated liability as at the end of the year in which such claims arose, and as at the end of the year of account; and the number and amount of such actual claims paid during the intervening period of two (or more) years; distinguishing claims terminated, and not terminated, within such period.

III.—Summary of estimated liability, in respect of claims outstanding as at the end of the year of account—

As per column (4) of Statement I. (*b*)	£
„ „ (5) „ II.	
„ „ (5) of further schedules in the form of Statement II. (if required)	
In respect of yearly allowances during permanent total disablement, outstanding at the end of the year of account, but not included in the above Statements ...	
Total estimated liability, in respect of outstanding claims as at the end of the year of account, as per First Schedule (C)	£

(D).—*Form applicable to Employers' Liability Insurance Business.*

STATEMENT of the ESTIMATED LIABILITY in respect of OUTSTANDING CLAIMS arising during each of the five years preceding the year of Account, and in such year; computed as at the end of the year in which the claims arose, and as at the end of the year of Account; with particulars as to the number and amount of the claims actually paid in the intervening period.

I.—Claims arising during the year of account ending 19 .

(*a*) Particulars as to claims arising and settled during the year of account:—

Class of Claim. (1)	Number. (2)	Amount paid. (3)
Fatal claims		£
Non-fatal claims		
Total		

(*b*) Particulars as to claims arising during, and outstanding at end of the year of account:—

Class of Claim. (1)	Number. (2)	Amount paid during year of account. (3)	Estimated Liability. (4)
Fatal claims . . .		£	£
Non-fatal claims . .			
Total . .			

II.—Outstanding claims which arose during the first year preceding the year of account, ending 19 .

Particulars of Claims. (1)	Estimated Liability in respect of Claims outstanding as at the above date. (2)		Claims paid during the period of 1 year between the above date and the end of the year of Account. (3)		Estimated Liability in respect of Claims outstanding as at the end of the year of Account. (4)		Total of Columns (3) and (4). (5)	
	Number	Amount	Number	Amount	Number	Amount	Number	Amount
Fatal claims .		£		£		£		£
Non-fatal claims—								
Terminated .					—	—		
Not terminated.								
Total . .								

III.—Outstanding claims which arose during the second year preceding the year of account, ending the 19 .

Particulars of Claims. (1)	Estimated Liability in respect of Claims outstanding as at the above date. (2)		Claims paid during the period of 2 years between the above date and the end of the year of Account. (3)		Estimated Liability in respect of Claims outstanding as at the end of the year of Account (4)		Total of Columns (3) and (4). (5)	
	Number	Amount	Number	Amount	Number	Amount	Number	Amount
		£		£		£		£
Fatal claims . .								
Non-fatal claims—								
Terminated . .					—	—		
Not terminated .								
Total . .								

IV.—Outstanding claims which arose during the third year preceding the year of account, ending the 19 .

Particulars of Claims. (1)	Estimated Liability in respect of Claims outstanding as at the above date. (2)		Claims paid during the period of 3 years between the above date and the end of the year of Account. (3)		Estimated Liability in respect of Claims outstanding as at the end of the year of Account. (4)		Total of Columns (3) and (4). (5)	
	Number	Amount	Number	Amount	Number	Amount	Number	Amount
		£		£		£		£
Fatal claims . .								
Non-fatal claims—								
Terminated . .					—	—		
Not terminated .								
Total . .								

V.—Outstanding claims which arose during the fourth year preceding the year of account, ending the 19 .

Particulars of Claims. (1)	Estimated Liability in respect of Claims outstanding as at the above date. (2)		Claims paid during the period of 4 years between the above date and the end of the year of Account. (3)		Estimated Liability in respect of Claims outstanding as at the end of the year of Account. (4)		Total of Columns (3) and (4). (5)	
	Number	Amount	Number	Amount	Number	Amount	Number	Amount
		£		£		£		£
Fatal claims . .								
Non-fatal claims—								
Terminated . .					—	—		
Not terminated .								
Total . .								

VI.—Outstanding claims which arose during the fifth year preceding the year of account, ending the 19 .

Particulars of Claims. (1)	Estimated Liability in respect of Claims outstanding as at the above date. (2)		Claims paid during the period of 5 years between the above date and the end of the year of Account. (3)		Estimated Liability (included in Statement VII. and valued by the method there specified) in respect of Claims outstanding as at the end of the year of Account. (4)		Total of Columns (3) and (4). (5)	
	Number	Amount	Number	Amount	Number	Amount	Number	Amount
		£		£		£		£
Fatal claims . .								
Non-fatal claims—								
Terminated . .					—	—		
Not terminated .								
Total . .								

Note.—In cases where the date at which the estimated liability required under column (2) in Forms IV., V., and VI. above would fall in any year prior to 1908, such estimated liability is to be returned as at the end of the year of account terminated in 1908, and the claims paid, required under column (3) of such forms, are to be in respect of the period between the end of the year of account terminated in 1908 and the end of the year of account rendered.

VII.—Statement respecting claims of five years' duration and upwards outstanding as at the end of the year of account. (To be made and signed by an actuary.)

(1) The number of claims incumbent and having durations of five years and upwards as at the end of the year of account, including those separately returned under Form VI. above; and the amount of the weekly payment, and of the annual payment, due in respect of such claims; separately stated in respect of each year of life of the workmen, from the youngest to the oldest. (These particulars to be returned under columns (1) to (4) of the tabular statement given below.)

(2) The estimated liability in respect of the claims specified above, computed, as at the end of the year of account, on the basis of the amount which would be required to purchase from the National Debt Commissioners, through the Post Office Savings Bank, an immediate life annuity for the workmen equal to 75 per cent. of the value of the weekly payment, according to the sex and true age of the workers. (These particulars to be returned under column (5) of the tabular statement given below, in respect of each year of life of the workmen, from the youngest to the oldest.)

(3) If the estimated liability, as reserved under the First Schedule in respect of the claims specified above, is computed on any basis other than that specified under Heading No. (2) above, the whole of the particulars required under Headings (1) and (2) above are to be returned in columns (1) to (5) of the tabular statement given below, together with the following additional particulars:—

(i) If the estimated liability is determined on the basis of the value of an immediate life annuity:—

(*a*) The table of mortality upon which such life annuity values are based;

(*b*) The rate of interest at which such life annuity values are computed;

(*c*) Whether such life annuity values are discriminated according to the sex of the workers;

(*d*) The proportion of such life annuity values representing the estimated liability;

(*e*) The modifications (if any) made in the true ages of the workmen, in deducing the estimated liability;

(*f*) The amount of the estimated liability. (To be returned, in respect of each year of life, in column (6) of the tabular statement given below.)

(ii) If the estimated liability is not determined on the basis of the value of an immediate life annuity, full particulars are to be specified as to the precise method adopted in deducing such estimated liability, and the total amount of estimated liability is to be returned under column (6) of the tabular statement given below.

Number of Claims. (1)	Ages of the Workmen as at the end of the Year of Account. (2)	Amount of Weekly Payment. (3)	Amount of Annual Payment. (4)	Estimated Liability computed on Basis of 75 per cent of Value of Life Annuity purchased through the Post Office. (5)	Estimated Liability if computed on Basis other than that specified in Column 5. (6)

NOTE.—Separate particulars to be furnished in respect of male and female workers.

Summary of estimated liability in respect of outstanding claims as at the end of the year of account—

	£
As per column (4) of Statement I (*b*) . .	
„ „ (4) „ II	
„ „ (4) „ III	
„ „ (4) „ IV	
„ „ (4) „ V	
„ „ (5) or (6) „ VII	
Total estimated liability in respect of outstanding claims as at the end of the year of account as per First Schedule (D) . . £	

(E).—*Form applicable to Bond Investment Business.*

STATEMENT respecting the VALUATION of the LIABILITY under BONDS and ENDOWMENT CERTIFICATES of the   to be made and signed by the ACTUARY.

(The answers should be numbered to accord with the numbers of the corresponding questions.)

1. The date up to which the valuation is made.

2. The principles adopted in the valuation of the liabilities under bond investment policies and endowment certificates, and whether these principles were determined by the instrument constituting the company, or by its regulations or byelaws, or how otherwise.

3. The rate or rates of interest assumed in the calculations.

4. The actual proportion of the annual income from contributions, if any, reserved as a provision for future expenses and profits. (If none, state how this provision is made.)

5. The consolidated revenue account since the last valuation, or, in the case of a company which has made no valuation, since the commencement of the business. (This return should be made in the form annexed. No return under this heading will be required where the valuation is made annually.)

6. The liabilities of the company under bond investment policies and endowment certificates at the date of the valuation, showing the number of policies or certificates, the amounts assured, the amount of contribution payable annually, and the provision for future expenses and profits; also the net liabilities and assets of the company, with the amount of surplus or deficiency. (These returns should be made in the forms annexed.)

7. The principles upon which the distribution of profits among the bond and certificate holders and shareholders is made, and whether those principles are determined by the instrument constituting the company, or by its regulations or byelaws, or how otherwise, and the time during which a bond investment policy or endowment certificate must be in force to entitle it to share in the profits.

8. The results of the valuation, showing—

(1) The total amount of profit made by the company, allocated as follows:—

(*a*) among participating bond or certificate holders, with the number so participating and the total amount of their bonds or certificates;

(*b*) among the shareholders;

(*c*) to reserve funds, or other accounts;

(*d*) carried forward unappropriated.

(2) Specimens of profit allotted to policies or certificates for £100 effected for different periods, and having been in force for different durations.

(Form referred to under Heading No. 5 in Schedule IV. (E)).

Consolidated Revenue Account of the......................for......Years Commencing......................19......
and ending..........................19......

	£ s. d.	£ s. d.		£ s. d.
Amount of Bond Investment and Endowment Certificate Fund at the beginning of the period .			Claims under Bonds and Certificates . . .	
Additional reserve, if any . :			Commission	
Premiums			Expenses of management	
Interest, dividends, and rents .	£ s. d.		Other payments (accounts to be specified) . .	
Less Income Tax thereon			Amount of Bond Investment and Endowment Certificate Fund at the end of the period, as per Third Schedule	
Other receipts (accounts to be specified) . .				

Note.—If any sum has been deducted for the Expenses of management account and taken credit for in the Balance Sheet as an asset, the sum so deducted to be separately shown in the above Statement.

(FORMS referred to under Heading No. 6 in Schedule IV. (E)).

SUMMARY and VALUATION of the BOND INVESTMENT POLICIES or ENDOWMENT CERTIFICATES of the as at 19 .

Description of Transactions.	Particulars of the Policies or Certificates for Valuation.			Valuation (Interest at per cent.).			
	No. of Policies.	Sums Assured and Bonuses (if any).	Full yearly Premiums.	Value of Sums Assured and Bonuses (if any).	Value of Full Yearly Premiums.	Provisions for future Expenses and Profits	Net Liability.
With participation in profits . . .							
Without participation in profits . . .							
Totals . . .							
Deduct re-assurances (to be specified according to class)							
Net Totals . .							
Adjustments (if any)							
Total of the results .							

(FORM referred to under Heading No. 6 in Schedule IV. (E)).

VALUATION BALANCE SHEET of the as at 19

Dr.	£	Cr.	£
To net liability under Bond Investment and Endowment Certificate transactions (as per summary statement provided in Fourth Schedule (E))		By Bond Investment and Endowment Certificate Fund (as per balance sheet under Schedule 3)	
To surplus (if any) . . .		By deficiency (if any) . . .	

Section 6.

SCHEDULE V.

N.B.—Where sinking fund or capital redemption business is carried on, a separate statement, signed by the actuary, must be furnished showing the total sums assured maturing in each calendar year and the corresponding office premiums.

(A).—*Form applicable to Life Assurance Business.*

STATEMENT of the LIFE ASSURANCE and ANNUITY BUSINESS of the on the 19 , to be signed by the Actuary.

(The answers should be numbered to accord with the numbers of the corresponding questions. Statements of reassurances corresponding to the statements in respect of assurances are to be given throughout.) Separate statements are to be furnished in the replies to all the headings under this schedule for business at other than European rates. Separate statements are to be also furnished throughout in respect of ordinary and industrial business respectively.

1. The published table or tables of premiums for assurances for the whole term of life and for endowment assurances which are in use at the date above mentioned.

2. The total amount assured on lives for the whole term of life which are in existence at the date above mentioned, distinguishing the portions assured with immediate profits, with deferred profits, and without profits, stating separately the total reversionary bonuses and specifying the sums assured for each year of life from the youngest to the oldest ages, the basis of division as to immediate and deferred profits being stated.

3. The amount of premiums receivable annually for each year of life, after deducting the abatements made by the application of bonuses, in respect of the respective assurances mentioned under Heading No. 2, distinguishing ordinary from extra premiums. A separate statement is to be given of premiums payable for a limited number of years, classified according to the number of years' payments remaining to be made.

4. The total amount assured under endowment assurances, specifying sums assured and office premiums separately in respect of each year in which such assurances will mature for payment. The reversionary bonuses must also be separately specified, and the sums assured with immediate profits, with deferred profits, and without profits, separately returned.

5. The total amount assured under classes of assurance business, other than assurances dealt with under Questions 2 and 4, distinguishing the sums assured under each class, and stating separately the amount assured with immediate profits, with deferred profits, and without profits, and the total amount of reversionary bonuses.

6. The amount of premiums receivable annually in respect of each such special class of assurances mentioned under Heading No. 5, distinguishing ordinary from extra premiums.

7. The total amount of premiums which has been received from the commencement upon pure endowment policies which are in force at the date above mentioned.

8. The total amount of immediate annuities on lives, distinguishing the amounts for each year of life, and distinguishing male and female lives.

9. The amount of all annuities on lives other than those specified under Heading No. 8, distinguishing the amount of annuities payable under each class, and the amount of premiums annually receivable.

10. The average rate of interest yielded by the assets, whether invested or uninvested, constituting the life assurance fund of the company, calculated upon the mean fund of each year during the period since the last investigation, without deduction of income tax.

It must be stated whether or not the mean fund upon which the average rate of interest is calculated includes reversionary investments.

11. A table of minimum values, if any, allowed for the surrender of policies for the whole term of life and for endowments and endowment assurances, or a statement of the method pursued in calculating such surrender values, with instances of the application of such method to policies of different standing and taken out at various interval ages from the youngest to the oldest. In the case of industrial policies, where free or paid up policies are granted in lieu of surrender values, the conditions under which such policies are granted must be stated, with specimens as prescribed for surrender values.

(E).—*Form applicable to Bond Investment Business.*

Statement of the Bond Investment Business of the
on the 19 . (To be signed by the Actuary.)

(The answers should be numbered to accord with the numbers of the corresponding questions. Statements of reinsurances, corresponding to the statements in respect of insurances, are throughout to be given.)

1. The published table or tables of rates of contribution for bond investment policies and endowment certificates which are in use at the date above mentioned; with full particulars as to the terms and conditions on which advances are made under such policies or certificates, whether on security of house property or land, or otherwise.

2. The total amounts assured under policies or certificates which are in existence at the date above mentioned, distinguishing the portions insured with and without profits, stating separately the total additions by way of bonus, and specifying such sums insured and bonuses respectively according to the number of complete years unexpired at such date.

3. The amount of premiums receivable annually, in respect of the respective insurances mentioned under Heading No. 2, separately specified according to the number of complete years unexpired at the date above mentioned.

4. The total amount of premiums which have been received from the commencement upon all policies or certificates mentioned under Headings Nos. 2 and 3, separately specified according to the number of complete years unexpired at the date above mentioned.

5. The average rate of interest realised by the assets, whether invested or uninvested, constituting the bond investment and endowment certificate fund of the company, calculated upon the mean fund of each year during the period since the last investigation, without deduction of income tax.

6. Full particulars as to the terms and conditions upon which surrenders of policies and certificates are granted, with specimens of the values

allowed in respect of different durations, and different unexpired terms at the date of surrender.

7. Full particulars as to the terms and conditions upon which allowances are made on the death of a policy or certificate holder, with specimen values as required under Heading No. 6.

8. Full particulars as to the terms and conditions upon which transfers of the interest in a policy or certificate are granted, whether on the death of the policy or certificate holder, or during his lifetime.

9. Full particulars as to the terms and conditions upon which redemption of advances is granted, with specimens of redemption values in respect of bonds or certificates of different durations, and having different unexpired terms, at the date of redemption.

10. A tabular statement in respect of policies or certificates lapsed during the period since the last investigation, showing the number, the amount insured, the yearly premiums, and the total premiums received from the commencement; classified according to the year in which such policies or certificates were effected, and lapsed, respectively; with a similar tabular statement in respect of policies or certificates surrendered during the period: Provided that policies or certificates which have lapsed and been revived shall not be entered as lapses.

11. A statement of the total number of advances made under policies or certificates to the holders thereof, whether on the security of house property or land or otherwise, and the total amount of such advances outstanding at the date above mentioned, distinguishing the advances on first mortgage and those on second or subsequent mortgage.

Section 17.

SCHEDULE VI.

Rules for Valuing Policies and Liabilities.

(A).—*As respects Life Policies and Annuities.*

Rule for valuing an Annuity.

An annuity shall be valued according to the tables used by the company which granted such annuity at the time of granting the same, and, where such tables cannot be ascertained or adopted to the satisfaction of the Court, then according to such rate of interest and table of mortality as the Court may direct.

Rule for valuing a Policy.

The value of the policy is to be the difference between the present value of the reversion in the sum assured according to the contingency upon which it is payable, including any bonus or addition thereto made before the commencement of the winding up, and the present value of the future annual premiums.

In calculating such present values interest is to be assumed at such rate, and the rate of mortality according to such tables, as the Court may direct.

The premium to be calculated is to be such premium as according to the said rate of interest and rate of mortality is sufficient to provide for the risk incurred by the office in issuing the policy, exclusive of any addition thereto for office expenses and other charges.

(B).—*As respects Fire Policies.*

Rule for valuing a Policy.

The value of a current policy shall be such portion of the last premium paid as is proportionate to the unexpired portion of the period in respect of which the premium was paid.

(C).—*As respects Accident Policies.*

Rule for valuing a periodical Payment.

The present value of a periodical payment shall, in the case of total permanent incapacity, be such an amount as would, if invested in the purchase of a life annuity from the National Debt Commissioners through the Post Office Savings Bank, purchase an annuity equal to seventy-five per centum of the annual value of the periodical payment, and, in any other case, shall be such proportion of such amount as may, under the circumstances of the case, be proper.

Rule for valuing a Policy.

The value of a current policy shall be such portion of the last premium paid as is proportionate to the unexpired portion of the period in respect of which the premium was paid.

(D).—*As respects Employers' Liability Policies.*

Rule for valuing a Weekly Payment.

The present value of a weekly payment shall, if the incapacity of the workman in respect of which it is payable is total permanent incapacity, be such an amount as would, if invested in the purchase of an immediate life annuity from the National Debt Commissioners through the Post Office Savings Bank, purchase an annuity for the workman equal to seventy-five per cent. of the annual value of the weekly payment, and in any other case shall be such proportion of such amount as may, under the circumstances of the case, be proper.

Rule for valuing a Policy.

The value of a current policy shall be such portion of the last premium paid as is proportionate to the unexpired portion of the period in respect of which the premium was paid, together with, in the case of a policy under which any weekly payment is payable, the present value of that weekly payment.

(E).—*As respects Bonds or Certificates.*

Rule for valuing a Policy or Certificate.

The value of a policy or certificate is to be the difference between the present value of the sum assured according to the date at which it is payable, including any bonus or addition thereto made before the commencement of the winding up, and the present value of the future annual premiums.

In calculating such present values, interest is to be assumed at such rate as the Court may direct.

The premium to be calculated is to be such premium as, according to the said rate of interest, is sufficient to provide for the sum assured by the policy or certificate, exclusive of any addition thereto for office expenses and other charges.

SCHEDULE VII.

Section 17.

Where an assurance company is being wound up by the Court or subject to the supervision of the Court, the liquidator, in the case of all persons appearing by the books of the company to be entitled to or interested in policies granted by such company, is to ascertain the value of the liability of the company to each such person, and give notice of such value to such persons in such manner as the Court may direct, and any person to whom notice is so given shall be bound by the value so ascertained unless he gives notice of his intention to dispute such value in manner and within a time to be prescribed by a rule or order of the Court.

Sections 28 and 33.

SCHEDULE VIII.

Requirements to be complied with by Underwriters being Members of Lloyd's or of any other Association of Underwriters approved by the Board of Trade.

(A).—*As respects Life Assurance Business.*

1. Every underwriter shall deposit and keep deposited in such manner as the Board of Trade may direct a sum of two thousand pounds. The Board of Trade may make rules as to the payment, repayment, investment of, and dealing with, a deposit, the payment of interest and dividends from any such investment, and for any other matters in respect of which they may make rules under section 2 (6) of this Act in relation to deposits made by assurance companies. The sum so deposited shall, so long as any liability under any policy issued by the underwriter remains unsatisfied, be available solely to meet claims under such policies.

2. The underwriter shall furnish every year to the Board of Trade a statement in such form as may be prescribed by the Board showing the extent and character of the life assurance business effected by him.

(B) *and* (C).—*As respects Fire and Accident Insurance Business.*

1. Except as hereinafter provided, every underwriter shall comply with the following requirements :—

(*a*) He shall deposit and keep deposited in such manner as the Board of Trade may direct a sum of two thousand pounds in respect of each class of business. The Board of Trade may make rules as to the payment, repayment, investment of, and dealing with, a deposit, the payment of interest and dividends from any such investment, and for any other matters in respect of which they may make rules under section 2 (6) of this Act in relation to deposits made by assurance companies. The sum so deposited shall, so long as any liability under any policy issued by the underwriter remains unsatisfied, be available solely to meet claims under such policies.

(*b*) He shall furnish every year to the Board of Trade a statement, in such form as may be prescribed by the Board, showing the extent and character of the fire or accident insurance business effected by him.

2. An underwriter who carries on fire insurance or accident insurance business may, in lieu of complying with the above requirements, elect to comply with the under-mentioned conditions :—

(*a*) All premiums received by or on behalf of the underwriter in respect of fire and accident insurance or re-insurance business carried on by him, either alone or in conjunction with any other insurance business for which special requirements are not laid down in this schedule, shall without any apportionment be placed in a trust fund in accordance with the provisions of a trust deed approved by the Board of Trade :

(*b*) He shall also furnish security to the satisfaction of the Board of Trade (or, if the Board so direct, to the satisfaction of the committee of the association), which shall be available solely to meet claims under policies issued by him in connection with fire and accident business and any other non-marine business carried on by him for which special requirements are not laid down in this schedule.

The security may be furnished in the form of either a deposit or a guarantee, or partly in the one form and partly in the other.

The amount of the security to be furnished shall never be less than the aggregate of the premiums received or receivable by the underwriter in the last preceding year in connection with such fire and accident and other non-marine business :—

(*c*) The accounts of every underwriter shall be audited annually by an accountant approved by the committee of the association, who shall furnish a certificate to the committee of the association and to the Board of Trade in a form prescribed by the Board of Trade :

(*d*) For the purpose of these requirements "non-marine insurance business" means the business of issuing policies upon subject-matters of insurance other than the following, namely :—

Vessels of any description, including barges and dredgers, cargoes, freights, and other interests which may be legally insured by, in, or in relation to vessels, cargoes, and freights, goods, wares, merchandise, and property of whatever description insured for any transit by land or water, or both, and whether or not including warehouse risks or similar risks in addition or as incidental to such transit.

(D).—*As respects Employers' Liability Insurance Business.*

1. Every underwriter shall deposit and keep deposited in such manner as the Board of Trade may direct a sum of two thousand pounds. The Board of Trade may make rules as to the payment, repayment, investment of, and dealing with, a deposit, the payment of interest and dividends from any such investment, and for any other matters in respect of which they may make rules under this Act in relation to deposits made by assurance companies. The sum so deposited shall, so long as any liability under any policy issued by the underwriter remains unsatisfied, be available solely to meet claims under such policies.

2. Where the person insured by any policy issued by an underwriter is liable to make a weekly payment to any workman during the incapacity of the workman, and the weekly payment has continued for more than six months, the liability therefor shall before the expiration of twelve months from the commencement of the incapacity be redeemed by the payment of a lump sum in accordance with paragraph (17) of the First Schedule to the Workmen's Compensation Act, 1906, and the underwriter shall pay the lump sum into the county court, and shall inform the court that the redemption has been effected in pursuance of the provisions of this schedule.

3. The underwriter shall furnish every year to the Board of Trade a statement in such form as may be prescribed by the Board showing the extent and character of the employers' liability business effected by him.

4. For the purposes of this schedule "policy" means a policy insuring any employer against liability to pay compensation or damages to workmen in his employment.

(E).—*As respects Bond Investment Business.*

1. Every underwriter shall deposit and keep deposited in such manner as the Board of Trade may direct a sum of two thousand pounds. The Board of Trade may make rules as to the payment, repayment, investment of, and dealing with a deposit, the payment of interest and dividends from any such investment, and for any other matters in respect of which they may make rules under section 2 (6) of this Act in relation to

deposits made by assurance companies. The sum so deposited shall, so long as any liability under any policy issued by the underwriter remains unsatisfied, be available solely to meet claims under such policies.

2. The underwriter shall furnish every year to the Board of Trade a statement in such form as may be prescribed by the Board showing the extent and character of the bond investment business effected by him.

SCHEDULE IX.

Section 37.

Enactments Repealed.

Session and Chapter.	Short Title.	Extent of Repeal.
33 & 34 Vict. c 61.	The Life Assurance Companies Act, 1870 .	The whole Act.
34 & 35 Vict. c. 58.	The Life Assurance Companies Act, 1871 .	The whole Act.
35 & 36 Vict. c. 41.	The Life Assurance Companies Act, 1872 .	The whole Act.
39 & 40 Vict. c. 22.	The Trade Union Act Amendment Act, 1876	Section seven.
7 Edw. 7. c. 46.	The Employers' Liability Insurance Companies Act, 1907.	The whole Act.

ASSURANCE COMPANIES ACT, 1909.

ORDER OF THE BOARD OF TRADE, MAKING RULES AND REGULATIONS, AND PRESCRIBING FORMS, UNDER THE ABOVE ACT.

RULES RELATING TO DEPOSITS BY ASSURANCE COMPANIES UNDER SECTION 2 OF THE ASSURANCE COMPANIES ACT, 1909.

1. These Rules apply to all Companies to which the Assurance Companies Act, 1909, applies; and in the construction of these Rules, unless and except so far as the context may otherwise require the following words or phrases shall have the following meanings, that is to say:—

"The Act" means the Assurance Companies Act, 1909.

"Company" means a Company to which the Act applies, and includes an Irish Company as next hereinafter defined.

"Irish Company" means a Company to which the Act applies, and which is registered or has its head office in Ireland.

"Assurance business" means all or any of the five classes of assurance business specified in Section 1 of the Act.

"The Court" means the Supreme Court of Judicature in England or in the case of an Irish Company the Supreme Court of Judicature in Ireland.

"The Paymaster-General" means the Paymaster-General for the time being or in the case of an Irish Company the Accountant-General for the time being of the Supreme Court of Judicature in Ireland.

"The Assistant Paymaster-General" means the official or one of the officials acting for the time being as the Assistant or Deputy of the Paymaster-General as hereinbefore defined in relation to business connected with the Court.

"The Bank" means the Bank of England (Law Courts' Branch), or in the case of an Irish Company the Bank of Ireland or in either case such Bank or Branch of a Bank as may from time to time be appointed to receive and deal with cash and securities under the control of the Paymaster-General on behalf of the Court.

2. Where any Company is required, in pursuance of the Act, to deposit the sum of twenty thousand pounds with the Paymaster-General for the time being for and on behalf of the Court, the Company, or the subscribers of the Memorandum of Association of the Company or any of them, as the case may be (in this Rule referred to as the Depositors), may, in the name of the Company, make application to the Board of Trade for a Warrant, and the Board of Trade may thereupon issue their Warrant to the Depositors for lodgment of such deposit in Court, which Warrant shall be a sufficient authority for the Company or persons therein named to lodge the money therein mentioned at the Bank to the account of the Paymaster-General for and on behalf of the Court, and for the Paymaster-General or the Assistant Paymaster-General to issue directions to the Bank to receive the same, to be placed in the books of the Paymaster-General, to the credit of *ex parte* the Company mentioned in such Warrant, according to the method for the time being in force respecting the lodgment of money.

Provided, that in lieu, wholly or in part, of the lodgment of money, the Depositors may bring into Court as a deposit an equivalent sum of any stocks, funds, or securities in which cash under the control of or subject to the order of the Court may for the time being be invested (the value thereof being taken at a price as near as may be to, but not exceeding, the current market price); and in that case the Board of Trade shall vary their Warrant accordingly, by directing the lodgment of such amount of such stocks, funds, or securities, by the Company or the persons therein named, to the said account of the said Paymaster-General for the credit in his books of *ex parte* the Company mentioned in such Warrant.

3. Where the assurance business by reason whereof the deposit is made is a class of business in respect of which a separate assurance fund is required to be kept (that is to say, is either life assurance business, employers' liability insurance business or bond investment business), then and in any such case the application to the Board of Trade and the Warrant of the Board of Trade shall specify the particular class of business in respect of which the deposit is being made, and the deposit shall be marked accordingly in the books of the Paymaster-General to a special ledger credit. In all other respects the provisions of the last preceding Rule shall apply to any such separate deposit.

4. Where a lodgment of money or securities has been made under the preceding Rules, the Court may, on the application of the Company, order:—

(*a*) Investment in such of the stocks, funds, or securities in which cash under the control of or subject to the order of the Court may for the time being be invested as the applicants desire and the Court thinks fit, and either by way of original investment or by way of variation of investment.

(*b*) Payment to the Company of the interest, dividends, or income from time to time accruing due on any stocks, funds, or securities in which the deposit is for the time being invested.

(*c*) Transfer or payment in the cases provided for by the Rules following of the deposit and the stocks, funds, or securities for the time being representing the same either from one ledger credit of the Company to another or out of Court.

5. In the subsequent provisions of these Rules the term "the deposit fund" means the money or securities deposited, or the stocks, funds, or securities for the time being representing the same, as the case may be.

6. In any case where it may appear to be just and equitable so to do, and in particular in any of the following cases, namely:—

(*a*) Where a Company having carried on or having intended to carry on only a class or classes of assurance business in respect of which a separate assurance fund is not required to be kept (that is to say either fire insurance business or accident insurance business) and having a deposit fund standing to the credit of the Company generally, intends subsequently to carry on a class of assurance business in respect of which a separate assurance fund is required to be kept;

(*b*) where a Company having carried on employers' liability insurance business or bond investment business as the case may be and having a deposit fund standing to a special ledger credit in respect of the class of business in question, has a fund amounting to £40,000 set apart and secured for the satisfaction of the claims of policy holders of that class, and intends subsequently to carry on in the first case bond investment business or in the second case employers' liability insurance business or in either of the said cases life assurance business;

the Court may on the application of the Company order the deposit fund to be transferred from the general account of the Company to a special ledger credit in respect of a particular class of assurance business, or from one special ledger credit in respect of one particular class of assurance business to another special ledger credit in respect of another particular class of assurance business, or otherwise to be dealt with as may be just and equitable and not in contravention of any provision of the Act.

7. In any case where it may be just and equitable so to do, and particularly in any of the following cases, namely :—

(*a*) Where a Company having carried on or having intended to carry on either fire insurance business, or accident insurance business, or both, and having a deposit fund standing to the credit of the Company generally, makes a further deposit in respect of any other class of assurance business ;

(*b*) where a Company has a deposit fund to a special ledger credit in respect of employers' liability business, and the employers' liability fund of the Company set apart and secured for the claims of policy holders of that class amounts to £40,000, and the Company has or makes a further deposit in respect of any other class of assurance business as provided for in Section 33 (*c*) of the Act ;

(*c*) where a Company has a deposit fund to a special ledger credit in respect of bond investment business, and the bond investment fund of the Company set apart and secured for the claims of the policy holders of that class amounts to £40,000, and the Company has or makes a further deposit in respect of any other class of assurance business as provided for in Section 34 (*c*) of the Act ;

(*d*) where a Company has ceased altogether to carry on within the United Kingdom, either assurance business of any class, or the particular class of assurance business to the special ledger credit whereof a deposit fund (not being the sole deposit fund) is standing, and all liabilities in respect of the deposit fund have been satisfied or are otherwise provided for ;

the Court may, on the application of the Company, order the deposit fund to be paid or transferred out of Court and returned to the Company or as it shall direct.

8. The issuing in any case of any Warrant or certificate relating to a deposit or to the deposit fund, or any error in any such Warrant or certificate, or in relation thereto, shall not make the Board of Trade, or the person signing the Warrant or certificate on their behalf, in any manner liable for or in respect of the deposit fund, or the interest or dividends accruing on the same, or any part thereof, respectively.

9. Any application under these Rules to the Court shall be made in such manner as shall from time to time be prescribed by Rules of Court, and until otherwise prescribed in the like manner in which similar applications under the Life Assurance Companies Acts, 1870 to 1872, and the Employers' Liability Insurance Companies Act, 1907, were made immediately prior to the commencement of the Act. Provided always that any application under Rule 6 or Rule 7 shall be served on the Board of Trade.

10. These Rules shall, so far as may be, extend to and authorise applications with regard to deposits already made by existing Companies under the provisions of the Life Assurance Companies Acts, 1870 to 1872, and the Employers' Liability Insurance Companies Act, 1907, and for this purpose deposits made under the Life Assurance Companies Acts, 1870 to 1872, and the deposit funds representing the same shall *prima facie* and in default of reason to the contrary be treated and dealt with as having been made in respect of the life assurance business of the Companies by or on behalf of which such deposits were made, and deposits made under the Employers' Liability Insurance Companies Act, 1907, and the deposit funds representing the same shall *prima facie* and in default of reason to the contrary, be treated and dealt with as having been made in respect of

the employers' liability insurance business of the Companies by or on behalf of which such deposits were made.

Where any such deposit as in this Rule mentioned has been made by an Irish Company, the same may be ordered by the Supreme Court of Judicature in England to be transferred from the account of the Paymaster-General of the English Court to a corresponding account of the Accountant-General of the Supreme Court of Judicature in Ireland.

Supplementary Rule.

Where any Company has made a deposit in pursuance of the Act which includes £3 10*s*. per cent. War Loan, £2 10*s*. per cent. Consols, £2 15*s*. per cent. Annuities, or £2 10*s*. per cent. Annuities, and the Company desires to convert such War Loan, Stock, or Annuities, or any part thereof, into £4 10*s*. per cent. War Loan, the Board of Trade may issue a warrant authorizing the conversion to be made, which warrant shall be a sufficient authority to the Paymaster-General to effect the conversion on his being furnished by the Company with the necessary documents and cash and the Paymaster-General shall effect the conversion accordingly.

Memorandum.

Deposits by Assurance Companies.—Investments by Order of the Supreme Court.

By Clause 10 of the Act of 1860 the Lord Chancellors of England and Ireland were empowered to make General Orders as to investments of cash under the control of the Court.

The Order made by the English Court on the 1st February, 1861, under the powers of this Act was superseded in 1883 and again in 1888 by the new Rules of the Supreme Court of Judicature. Rule 17 of Order XXII. of the Rules of the Supreme Court, 1883, as amended by subsequent Rules, is as follows:—

Cash under the control of or subject to the order of the Court may be invested in the following stocks, funds, or securities, namely:—

War Loans and National War Bonds issued by the British Government:

Two-and-a-half per cent. Consolidated Stock:

Two Pounds Fifteen Shillings per cent. Annuities:

Two Pounds Ten Shillings per cent. Annuities:

Local Loans Stock under the National Debt and Local Loans Act, 1887:

Exchequer Bills:

Bank of England Stock:

India Three-and-a-half per cent. Stock:

India Three per cent. Stock:

Indian Guaranteed Railway Stocks or Shares, provided in each case that such Stocks or Shares shall not be liable to be redeemed within a period of fifteen years from the date of investment:

Stocks of Colonial Governments guaranteed by the Imperial Government, or in respect of which the provisions of the Colonial Stock Act, 1900, and of Section 2 (2) of the Trustee Act, 1893, are for the time being complied with:

Metropolitan Consolidated Stock, Three Pounds Ten Shillings per cent.:

Three per cent. Metropolitan Consolidated Stock:

Two-and-a-half per cent. Metropolitan Consolidated Stock:

Two-and-a-half per cent. London County Consolidated Stock:

Three per cent. London County Consolidated Stock:

Three-and-a-half per cent. London County Council Stock:

Corporation of London Inscribed Two-and-a-half per cent. Debenture Stock:

Corporation of London Inscribed Three per cent. Debenture Stock:

Debenture, Preference, Guaranteed, or Rent-Charge Stocks of railways in Great Britain or Ireland having for ten years next before the date of investment paid a dividend on Ordinary Stock or Shares:

Debenture, Preference, Guaranteed, or Rent-Charge Stocks of railways in Great Britain or Ireland guaranteed by Railway Companies owning railways in Great Britain or Ireland which have for ten years next before the date of investment paid a dividend on Ordinary Stock or Shares:

Nominal Debentures or Nominal Debenture Stock under the Local Loans Act, 1875, or under the Isle of Man Loans Act, 1880, provided in each case that such Debentures or Stock shall not be liable to be redeemed within a period of fifteen years from the date of investment.

Rules relating to the Audit of Accounts of Assurance Companies.

1. The accounts of every assurance company not subject to audit in accordance with the provisions of the Companies (Consolidation) Act, 1908, or of the Companies Clauses Consolidation Act, 1845, relating to audit shall be audited in accordance with the provisions of Section 113 (1) and (2) of the Companies (Consolidation) Act, 1908.

2. No director or officer of the company shall be capable of being appointed an auditor.

3. In the case of a company having a share capital, the auditor or auditors shall be elected annually by the shareholders.

Rules relating to the Custody, Inspection, and Certification of Documents.

1. A copy of every account, balance sheet, abstract, statement, or report required by the Assurance Companies Act, 1909, to be deposited with the Board of Trade shall be kept by the Registrar of Joint Stock Companies, and shall be open to inspection by any person on payment of a fee of one shilling for each inspection; and any person may procure a copy of any such document or any part thereof on payment of 4*d.* a folio of 72 words.

2. The Assistant Registrars are hereby appointed (in addition to the Registrar) for the purpose of certifying documents under Section 21 of the said Act.

Rules relating to the Qualifications of an Actuary.

1. Any person signing as actuary valuation returns of life assurance business, sinking fund or capital redemption insurance business, or bond investment business shall be either:—

(1) a Fellow of the Institute of Actuaries or of the Faculty of Actuaries; or

(2) where application is made by a company and where, in the opinion of the Board of Trade, special circumstances exist, an Associate of the Institute of Actuaries or of the Faculty of Actuaries; or

(3) the actuary at the date of making these Rules to a company under the Assurance Companies Act, 1909, having its head office within the United Kingdom or to any closed fund of such a company established in consequence of an amalgamation or transfer; or

(4) such other person having actuarial knowledge as the Board of Trade may, on the application of a company, approve.

2. Any person signing as actuary returns with regard to employers' liability business shall be either—

(1) a Fellow or Associate of the Institute of Actuaries or of the Faculty of Actuaries; or

(2) the actuary at the date of making these Rules to a company under the said Act having its head office within the United Kingdom or to any closed fund of such a company established in consequence of an amalgamation or transfer; or

(3) such other person as the Board of Trade may, on the application of a company, approve.

[The Rules also include provisions as to Deposits by the Underwriters who are members of Lloyd's, as to the security to be rendered by such Underwriters, and as to the form of certificate to be furnished on audit of their accounts; also forms of returns to be furnished by such Underwriters, in respect of different classes of assurance business effected by them. These forms are based generally upon Schedules 1 to 5 of the Act, but are in a somewhat abbreviated form.]

APPENDIX B.

SCHEDULE OF STAMP DUTIES.

(See Chap. XI.)

SCHEDULE OF STAMP DUTIES.

(*Stamp Act*, 1891, *unless where otherwise stated.*)

	£	s.	d.
Acknowledgment of right to production of Deeds:			
Under hand (Agreement)	0	0	6
Under Seal (Covenant)	0	10	0
Affidavit, or Statutory Declaration made by virtue of the Statutory Declarations Act, 1835	0	2	6
There are several exemptions.			
Agreement or Undertaking not otherwise charged:			
Under hand	0	0	6
Under Seal	0	10	0
Agreements are of such a varied character that it is always desirable to consult the Act. The duty of 6*d*. may be denoted by an adhesive stamp which must be cancelled by the person by whom the agreement is first executed.			
Annuity Bond (see Bond, and Conveyance on Sale).			
Appointment of a new Trustee	0	10	0
If the instrument of new appointment contains a conveyance of trust property or a declaration under Sec. 12 of Trustee Act, 1893, vesting the trust property in the new trustee it is liable as a conveyance to the further duty of	0	10	0
Arrangement, Deed of (see Deed).			
Articles of Partnership under Seal	0	10	0
(where a premium is payable for share of partnership *ad val.* conveyance duty is payable on the amount)			
Assignment by way of Security (see Mortgage, etc.).			
" " Sale (see Conveyance).			
Bond for securing payment or repayment of money (see Mortgage).			
Bond, Covenant, or Instrument of any kind whatsoever.			
1. Being the only or principal or primary security for any annuity (except upon the original creation thereof by way of sale or security and except a superannuation annuity) or for any sum or sums of money at stated periods, not being interest for any principal sum secured by a duly stamped instrument, nor rent reserved by a lease or tack.			
For a definite and certain period, so that the total amount to be ultimately payable can be ascertained	The same *ad val.* duty as a Bond or Covenant for such total amount.		
For the term of life or any other indefinite period.			
For every £5, and also for any fractional part of £5, of the annuity or sum periodically payable ...	0	2	6
2. Being a collateral or auxiliary or additional or substituted security for any of the above mentioned purposes where the principal or primary instrument is duly stamped.			
Where the total amount to be ultimately payable can be ascertained	The same *ad val.* duty as a Bond or Covenant of the same kind for such total amount.		

	£ s. d.
In any other case	
For every £5, and also for any fractional part of £5, of the annuity or sum periodically payable	0 0 6
3. Being a grant or contract for payment of a superannuation annuity; that is to say, a deferred life annuity granted or secured to any person in consideration of annual premiums payable until a specified age and so as to commence on his attaining that age.	
For every £5, and also for any fractional part of £5, of the annuity	0 0 6
Bond of any kind whatsoever not specifically charged with any duty.	
Where the amount limited to be recoverable does not exceed £300	The same *ad val.* duty as a Bond for the amount limited.
In any other case	0 10 0
Collateral Security (see Mortgage).	
Commission of Lunacy	0 5 0
Composition (see Deed of Arrangement).	
Conveyance or transfer on sale of any Property (except marketable securities). (Stamp Act, 1891; Finance (1909-10) Act, 1910, ss. 73 and 74; Finance Act, 1920, s. 36).	
Where amount does not exceed £5	0 0 6
" " 10	0 1 0
" " 15	0 1 6
" " 20	0 2 0
" " 25	0 2 6
" " 50	0 5 0
" " 75	0 7 6
" " 100	0 10 0
" " 125	0 12 6
" " 150	0 15 0
" " 175	0 17 6
" " 200	1 0 0
" " 225	1 2 6
" " 250	1 5 0
" " 275	1 7 6
" " 300	1 10 0
" " 350	1 15 0
" " 400	2 0 0
" " 450	2 5 0
" " 500	2 10 0
" " 550	5 10 0

and so on, increasing by 10s. for each additional £50 or fractional part of £50 in the consideration.

NOTE.—The above-mentioned rates of duty for conveyances from £5 to £500, apply only when the instrument contains a statement certifying that the transaction thereby effected does not form part of a larger transaction or of a series of transactions in respect of which the amount or value, or the aggregate amount or value, of the consideration exceeds £500. In the absence of such a statement the duty chargeable is double that stated above.

An Annuity Bond granted by an Assurance Company at a single premium is chargeable as a Conveyance on Sale. For other cases, see "Bond."

	£ s. d.
Conveyance or transfer operating as a voluntary disposition *inter vivos* is chargeable with the like stamp duty as if it were a conveyance or transfer on sale, with the substitution in each case of the value of the property conveyed or transferred for the amount or value of the consideration for the sale.	
No such conveyance or transfer will be deemed duly stamped unless it bears the Adjudication Stamp.	
Of any kind not otherwise charged	0 10 0
Copy, or Extract, of Probate, Letters of Administration, or any Instrument chargeable with Duty, attested or authenticated	0 1 0
In the case of an instrument chargeable with any duty not amounting to 1*s*., the same duty as such instrument. An attested copy may be stamped at any time within 14 days after the date of the attestation.	
Copy, or Extract .(Certified) of or from any register of births, baptisms, marriages, deaths or burials	0 0 1
Covenant for securing the payment or repayment of money (see Mortgage).	
Covenant in relation to any annuity, upon the original creation and sale thereof (see Conveyance on Sale).	
Covenant in relation to any annuity (except upon the original creation and sale thereof) or to other periodical payments (see Bond, Covenant, etc.).	
Declaration of any use or trust of or concerning any property by any writing, not being a will, or an instrument chargeable with *ad valorem* duty as a settlement...	0 10 0
Deed of any kind, not described in the Stamp Act Schedule or otherwise charged	0 10 0
Deed of Arrangement for benefit of creditors : for each £100 or for a fraction of £100 of the sworn net value of the property passing or (if no property passes) of the amount of composition payable	0 1 0
This is in addition to the *ad val.* Mortgage Duty on the amount of the Composition, or if no covenant for composition	0 10 0
(Deeds of Arrangement Act, 1914, s. 5 (2).)	
Denoting Stamp. Where the duty with which an instrument (other than a duplicate) is chargeable depends in any manner upon the duty paid upon another instrument, the payment of such last-mentioned duty will, on production at the Office of the Solicitor of Inland Revenue of both instruments, be denoted upon such first-mentioned instrument.	
Deposit of Title Deeds as Security (see Equitable Mortgage).	
Duplicate or Counterpart of any instrument chargeable with any duty, where such duty does not amount to 5s., the same duty as the original instrument. In any other case	0 5 0
Equitable Mortgage, Agreement or Memorandum (under hand only), for every £100 and any fractional part of £100 of the amount secured	0 1 0
Memorandums of Deposit of life assurance policies are liable to this duty, provided the instrument contains no power of sale. If, however, the document gives to the lender the powers conferred on a mortgagee by the Conveyancing Act, then it ceases to be a mere Memorandum of Deposit and is chargeable with the ordinary mortgage duty of	

	£	s.	d.
2s. 6d. per cent. A transfer of an equitable mortgage is chargeable with duty at 6d. per cent. on amount transferred.			
Further Charge or Further Security (see Mortgage.)			
Insurance (see Policy).			
Memorandum of Deposit of title Deeds including Life Policies (see Equitable Mortgage).			
Mortgage, Bond, Debenture, Covenant (except a Marketable Security otherwise specially charged with duty).			
1. Being the only or principal or primary security (other than an equitable mortgage) for the payment or repayment of money not exceeding £10...	0	0	3
Exceeding £10 and not exceeding £25	0	0	8
" 25 " 50	0	1	3
" 50 " 100	0	2	6
" 100 " 150	0	3	9
" 150 " 200	0	5	0
" 200 " 250	0	6	3
" 250 " 300	0	7	6
Exceeding £300, for every £100, and also for any fractional part of £100 of the amount secured...	0	2	6
2. Being a collateral, or auxiliary, or additional, or substituted security (other than an equitable mortgage) or by way of further assurance where the primary security is duly stamped.			
For every £100 and fractional part of £100	0	0	6
Total duty payable not to exceed 10s. (Revenue Act, 1903, Sec. 7.)			
A duty paid stamp should be obtained on a collateral security.			
3. Transfer, assignment, disposition or assignation of any mortgage (except a marketable security).			
For every £100 and fractional part of £100... ...	0	0	6
and also, where any further money is added to the money already secured, the same duty as a principal security for such further money.			
4. Being an equitable mortgage.			
For every £100 and any fractional part of £100 ...	0	1	0
5. Reconveyance, release, discharge, surrender, etc.			
For every £100 and also for any fractional part of £100 of the total amount at any time secured ...	0	0	6
Notarial Act of any kind (except protests)	0	1	0
Adhesive stamp may be used, to be cancelled by the Notary.			
Policy of Insurance. The expression "policy of insurance" includes every writing whereby any contract of insurance is made or agreed to be made, or is evidenced and the expression life insurance includes assurance upon any life or lives or upon any event or contingency relating to or depending upon any life or lives except a policy of insurance against accident.			
Life Insurance, including endowment assurance policy, a pure endowment and a double endowment policy. Where the sum insured does not exceed £10	0	0	1
Exceeding £10 but not exceeding £25...	0	0	3
Exceeding £25 but not exceeding £500, for every full sum of £50, and also for any fractional part of £50 of the amount insured	0	0	6

	£	s.	d.
Exceeding £500 but not exceeding £1,000, for every £100, and also for any fractional part of £100 ...	0	1	0
Exceeding £1,000 for every full sum of £1,000, and also for any fractional part of £1,000 of the amount insured	0	10	0
Re-assurances. Policies issued by re-assuring offices on their own form of guarantee endorsed on a copy of the original policy:			
If under hand	0	0	6
Or if under Seal	0	10	0
Penalty for not making out policy or making any policy not duly stamped, other than a sea insurance, a fine of £20.			
Power of Attorney (with certain exceptions at lower rates of duty)	0	10	0
Receipt. Receipt includes any note, memo., or writing whereby any money amounting to £2 or upwards, or any bill of exchange or promissory note for money amounting to £2 or upwards is acknowledged or expressed to have been received or deposited or paid, or whereby any debt or demand, or any part of a debt or demand, of the amount of £2, or upwards is acknowledged to have been settled, satisfied or discharged, or which signifies or imports any such acknowledgment, and whether the same is or is not signed with the name of any person	0	0	2
The duty may be denoted by an adhesive stamp which is to be cancelled by the person giving the receipt.			
Receipt endorsed on a policy of insurance for moneys payable thereunder does not require a stamp.			
A receipt given without being stamped may be stamped with an impressed stamp within 14 days after it has been given on payment of the duty and a penalty of £5. After 14 days and within one month on payment of the duty and penalty of £10.			
Penalty of £10 for giving a receipt liable to duty not duly stamped, or refusing to give a receipt liable to duty not duly stamped, or for giving receipts for a sum less than that actually paid.			
There are numerous exemptions. (Stamp Act, 1891; Finance Act, 1895; Finance Act, 1920, S. 34.)			
Reconveyance, Release or Renunciation of any Security (see Mortgage).			
Release or Renunciation of any property or of any right or interest in any property.			
Upon sale (see Conveyance on Sale).			
By way of Security (see Mortgage).			
In any other case	0	10	0
Settlement. When not chargeable as a voluntary disposition. Any instrument whether voluntary or upon any good or valuable consideration, other than a *bonâ fide* pecuniary consideration, whereby any definite and certain principal sum of money or any definite and certain amount of stock, or any security, is settled, or agreed to be settled in any manner whatsoever. For every £100 and also for any fractional part of £100, of the amount or value of the property settled or agreed to be settled	0	5	0
Life policy, where any money which may become due or payable upon any policy of life insurance, or upon any security, not being a marketable security, is settled or agreed to be settled, the instrument whereby the settlement is made or agreed to be made is to be charged with *ad valorem*			

£ s. d.

duty in respect of that money, provided as follows: (*a*) Where in the case of a policy, no provision is made for keeping up the policy, the *ad valorem* duty is to be charged only on the value of the policy at the date of the instrument. (*b*) If in any such case the instrument contains a statement of the said value, and is stamped in accordance with the statement, it is, so far as regards the policy, to be deemed duly stamped, unless or until it is shown that the statement is untrue, and that the instrument is in fact insufficiently stamped.

A settlement of a single premium policy is chargeable with duty upon the sum assured and bonuses (if any).

A settlement of a policy containing the ordinary covenant for payment of premiums and keeping up the policy is not an instrument wherein "no provision is made for keeping up the policy," and *ad valorem* duty is chargeable upon the sum assured and bonuses (if any).

A covenant to effect a policy for a definite sum attracts *ad valorem* duty on such sum if the settlement contains a provision for keeping up the policy.

A covenant to settle after-acquired property attracts an additional duty of 10*s*.

Superannuation Annuity (see Annuity).

Undertaking (see Acknowledgment).

APPENDIX C.

COMPOUND INTEREST TABLES.

(SEE CHAPTER XVII.)

I. The Amount of 1, accumulated at Compound Interest, at the end of a given number of intervals.

Rates of Interest—2½, 3, 3½, 4, 4½ and 5 per cent. per interval.

II. The Present Value of 1 to be received at the end of a given number of intervals.

Rates of Interest—2½, 3, 3½, 4, 4½ and 5 per cent. per interval.

III. The Amount of an Annuity of 1 (payable at the end of each interval) after a given number of intervals.

Rates of Interest—2½, 3, 3½, 4, 4½ and 5 per cent. per interval.

IV. The Present Value of an Annuity of 1 (payable at the end of each interval) for a given number of intervals.

Rates of Interest—2½, 3, 3½, 4, 4½ and 5 per cent. per interval.

Compound Interest.—Table I.

The Amount of 1 *at the end of a given number of intervals.*

No. of intervals.	2½%	3%	3½%	4%	4½%	5%	No. of intervals.
1	1·02500	1·03000	1·03500	1·04000	1·04500	1·05000	1
2	1·05063	1·06090	1·07123	1·08160	1·09203	1·10250	2
3	1·07689	1·09273	1·10872	1·12486	1·14117	1·15763	3
4	1·10381	1·12551	1·14752	1·16986	1·19252	1·21551	4
5	1·13141	1·15927	1·18769	1·21665	1·24618	1·27628	5
6	1·15969	1·19405	1·22926	1·26532	1·30226	1·34010	6
7	1·18869	1·22987	1·27228	1·31593	1·36086	1·40710	7
8	1·21840	1·26677	1·31681	1·36857	1·42210	1·47746	8
9	1·24886	1·30477	1·36290	1·42331	1·48610	1·55133	9
10	1·28008	1·34392	1·41060	1·48024	1·55297	1·62889	10
11	1·31209	1·38423	1·45997	1·53945	1·62285	1·71034	11
12	1·34489	1·42576	1·51107	1·60103	1·69588	1·79586	12
13	1·37851	1·46853	1·56396	1·66507	1·77220	1·88565	13
14	1·41297	1·51259	1·61869	1·73168	1·85194	1·97993	14
15	1·44830	1·55797	1·67535	1·80094	1·93528	2·07893	15
16	1·48451	1·60471	1·73399	1·87298	2·02237	2·18287	16
17	1·52162	1·65285	1·79468	1·94790	2·11338	2·29202	17
18	1·55966	1·70243	1·85749	2·02582	2·20848	2·40662	18
19	1·59865	1·75351	1·92250	2·10685	2·30786	2·52695	19
20	1·63862	1·80611	1·98979	2·19112	2·41171	2·65330	20
21	1·67958	1·86029	2·05943	2·27877	2·52024	2·78596	21
22	1·72157	1·91610	2·13151	2·36992	2·63365	2·92526	22
23	1·76461	1·97359	2·20611	2·46472	2·75217	3·07152	23
24	1·80873	2·03279	2·28333	2·56330	2·87601	3·22510	24
25	1·85394	2·09378	2·36324	2·66584	3·00543	3·38635	25
26	1·90029	2·15659	2·44596	2·77247	3·14068	3·55567	26
27	1·94780	2·22129	2·53157	2·88337	3·28201	3·73346	27
28	1·99650	2·28793	2·62017	2·99870	3·42970	3·92013	28
29	2·04641	2·35657	2·71188	3·11865	3·58404	4·11614	29
30	2·09757	2·42726	2·80679	3·24340	3·74532	4·32194	30
31	2·15001	2·50008	2·90503	3·37313	3·91386	4·53804	31
32	2·20376	2·57508	3·00671	3·50806	4·08998	4·76494	32
33	2·25885	2·65234	3·11194	3·64838	4·27403	5·00319	33
34	2·31532	2·73191	3·22086	3·79432	4·46636	5·25335	34
35	2·37321	2·81386	3·33359	3·94609	4·66735	5·51602	35
36	2·43254	2·89828	3·45027	4·10393	4·87738	5·79182	36
37	2·49335	2·98523	3·57103	4·26809	5·09686	6·08141	37
38	2·55568	3·07478	3·69601	4·43881	5·32622	6·38548	38
39	2·61957	3·16703	3·82537	4·61637	5·56590	6·70475	39
40	2·68506	3·26204	3·95926	4·80102	5·81636	7·03999	40
41	2·75219	3·35990	4·09783	4·99306	6·07810	7·39199	41
42	2·82100	3·46070	4·24126	5·19278	6·35162	7·76159	42
43	2·89152	3·56452	4·38970	5·40050	6·63744	8·14967	43
44	2·96381	3·67145	4·54334	5·61652	6·93612	8·55715	44
45	3·03790	3·78160	4·70236	5·84118	7·24825	8·98501	45
46	3·11385	3·89504	4·86694	6·07482	7·57442	9·43426	46
47	3·19170	4·01190	5·03728	6·31782	7·91527	9·90597	47
48	3·27149	4·13225	5·21359	6·57053	8·27146	10·40127	48
49	3·35328	4·25622	5·39606	6·83335	8·64367	10·92133	49
50	3·43711	4·38391	5·58493	7·10668	9·03264	11·46740	50
60	4·39979	5·89160	7·87809	10·51963	14·02741	18·67919	60
70	5·63210	7·91782	11·11283	15·57162	21·78414	30·42643	70
80	7·20957	10·64089	15·67574	23·04980	33·83010	49·56144	80
90	9·22886	14·30047	22·11218	34·11933	52·53711	80·73037	90
100	11·81372	19·21863	31·19141	50·50495	81·58852	131·50126	100

Compound Interest.—Table II.

The Present Value of 1 *due at the end of a given number of intervals.*

No. of intervals.	$2\frac{1}{2}\%$	3%	$3\frac{1}{2}\%$	4%	$4\frac{1}{2}\%$	5%	No. of intervals.
1	·97561	·97087	·96618	·96154	·95694	·95238	1
2	·95181	·94260	·93351	·92456	·91573	·90703	2
3	·92860	·91514	·90194	·88900	·87630	·86384	3
4	·90595	·88849	·87144	·85480	·83856	·82270	4
5	·88385	·86261	·84197	·82193	·80245	·78353	5
6	·86230	·83748	·81350	·79031	·76790	·74622	6
7	·84127	·81309	·78599	·75992	·73483	·71068	7
8	·82075	·78941	·75941	·73069	·70319	·67684	8
9	·80073	·76642	·73373	·70259	·67290	·64461	9
10	·78120	·74409	·70892	·67556	·64393	·61391	10
11	·76214	·72242	·68495	·64958	·61620	·58468	11
12	·74356	·70138	·66178	·62460	·58966	·55684	12
13	·72542	·68095	·63940	·60057	·56427	·53032	13
14	·70773	·66112	·61778	·57748	·53997	·50507	14
15	·69047	·64186	·59689	·55526	·51672	·48102	15
16	·67362	·62317	·57671	·53391	·49447	·45811	16
17	·65720	·60502	·55720	·51337	·47318	·43630	17
18	·64117	·58739	·53836	·49363	·45280	·41552	18
19	·62553	·57029	·52016	·47464	·43330	·39573	19
20	·61027	·55368	·50257	·45639	·41464	·37689	20
21	·59539	·53755	·48557	·43883	·39679	·35894	21
22	·58086	·52189	·46915	·42196	·37970	·34185	22
23	·56670	·50669	·45329	·40573	·36335	·32557	23
24	·55288	·49193	·43796	·39012	·34770	·31007	24
25	·53939	·47761	·42315	·37512	·33273	·29530	25
26	·52623	·46369	·40884	·36069	·31840	·28124	26
27	·51340	·45019	·39501	·34682	·30469	·26785	27
28	·50088	·43708	·38165	·33348	·29157	·25509	28
29	·48866	·42435	·36875	·32065	·27902	·24295	29
30	·47674	·41199	·35628	·30832	·26700	·23138	30
31	·46511	·39999	·34423	·29646	·25550	·22036	31
32	·45377	·38834	·33259	·28506	·24450	·20987	32
33	·44270	·37703	·32134	·27409	·23397	·19987	33
34	·43191	·36604	·31048	·26355	·22390	·19035	34
35	·42137	·35538	·29998	·25342	·21425	·18129	35
36	·41109	·34503	·28983	·24367	·20503	·17266	36
37	·40107	·33498	·28003	·23430	·19620	·16444	37
38	·39128	·32523	·27056	·22529	·18775	·15661	38
39	·38174	·31575	·26141	·21662	·17967	·14915	39
40	·37243	·30656	·25257	·20829	·17193	·14205	40
41	·36335	·29763	·24403	·20028	·16453	·13528	41
42	·35448	·28896	·23578	·19257	·15744	·12884	42
43	·34584	·28054	·22781	·18517	·15066	·12270	43
44	·33740	·27237	·22010	·17805	·14417	·11686	44
45	·32917	·26444	·21266	·17120	·13796	·11130	45
46	·32115	·25674	·20547	·16461	·13202	·10600	46
47	·31331	·24926	·19852	·15828	·12634	·10095	47
48	·30567	·24200	·19181	·15219	·12090	·09614	48
49	·29822	·23495	·18532	·14634	·11569	·09156	49
50	·29094	·22811	·17905	·14071	·11071	·08720	50
60	·22728	·16973	·12693	·09506	·07129	·05354	60
70	·17755	·12630	·08999	·06422	·04590	·03287	70
80	·13870	·09398	·06379	·04338	·02956	·02018	80
90	·10836	·06993	·04522	·02931	·01903	·01239	90
100	·08465	·05203	·03206	·01980	·01226	·00760	100

COMPOUND INTEREST.—TABLE III.

The Amount of 1 per interval (payable at the end of each interval) after a given number of intervals.

No. of intervals.	2½%	3%	3½%	4%	4½%	5%	No. of intervals.
1	1·0000	1·0000	1·0000	1·0000	1·0000	1·0000	1
2	2·0250	2·0300	2·0350	2·0400	2·0450	2·0500	2
3	3·0756	3·0909	3·1062	3·1216	3·1370	3·1525	3
4	4·1525	4·1836	4·2149	4·2465	4·2782	4·3101	4
5	5·2563	5·3091	5·3625	5·4163	5·4707	5·5256	5
6	6·3877	6·4684	6·5502	6·6330	6·7169	6·8019	6
7	7·5474	7·6625	7·7794	7·8983	8·0192	8·1420	7
8	8·7361	8·8923	9·0517	9·2142	9·3800	9·5491	8
9	9·9545	10·1591	10·3685	10·5828	10·8021	11·0266	9
10	11·2034	11·4639	11·7314	12·0061	12·2882	12·5779	10
11	12·4835	12·8078	13·1420	13·4864	13·8412	14·2068	11
12	13·7956	14·1920	14·6020	15·0258	15·4640	15·9171	12
13	15·1404	15·6178	16·1130	16·6268	17·1599	17·7130	13
14	16·5190	17·0863	17·6770	18·2919	18·9321	19·5986	14
15	17·9319	18·5989	19·2957	20·0236	20·7841	21·5786	15
16	19·3802	20·1569	20·9710	21·8245	22·7193	23·6575	16
17	20·8647	21·7616	22·7050	23·6975	24·7417	25·8404	17
18	22·3863	23·4144	24·4997	25·6454	26·8551	28·1324	18
19	23·9460	25·1169	26·3572	27·6712	29·0636	30·5390	19
20	25·5447	26·8704	28·2797	29·7781	31·3714	33·0660	20
21	27·1833	28·6765	30·2695	31·9692	33·7831	35·7193	21
22	28·8629	30·5368	32·3289	34·2480	36·3034	38·5052	22
23	30·5844	32·4529	34·4604	36·6179	38·9370	41·4305	23
24	32·3490	34·4265	36·6665	39·0826	41·6892	44·5020	24
25	34·1578	36·4593	38·9499	41·6459	44·5652	47·7271	25
26	36·0117	38·5530	41·3131	44·3117	47·5706	51·1135	26
27	37·9120	40·7096	43·7591	47·0842	50·7113	54·6691	27
28	39·8598	42·9309	46·2906	49·9676	53·9933	58·4026	28
29	41·8563	45·2189	48·9108	52·9663	57·4230	62·3227	29
30	43·9027	47·5754	51·6227	56·0849	61·0071	66·4388	30
31	46·0003	50·0027	54·4295	59·3283	64·7524	70·7608	31
32	48·1503	52·5028	57·3345	62·7015	68·6662	75·2988	32
33	50·3540	55·0778	60·3412	66·2095	72·7562	80·0638	33
34	52·6129	57·7302	63·4532	69·8579	77·0303	85·0670	34
35	54·9282	60·4621	66·6740	73·6522	81·4966	90·3203	35
36	57·3014	63·2759	70·0076	77·5983	86·1640	95·8363	36
37	59·7339	66·1742	73·4579	81·7022	91·0413	101·6281	37
38	62·2273	69·1594	77·0289	85·9703	96·1382	107·7095	38
39	64·7830	72·2342	80·7249	90·4091	101·4644	114·0950	39
40	67·4026	75·4013	84·5503	95·0255	107·0303	120·7998	40
41	70·0876	78·6633	88·5095	99·8265	112·8467	127·8398	41
42	72·8398	82·0232	92·6074	104·8196	118·9248	135·2318	42
43	75·6608	85·4839	96·8486	110·0124	125·2764	142·9933	43
44	78·5523	89·0484	101·2383	115·4129	131·9138	151·1430	44
45	81·5161	92·7199	105·7817	121·0294	138·8500	159·7002	45
46	84·5540	96·5015	110·4840	126·8706	146·0982	168·6852	46
47	87·6679	100·3965	115·3510	132·9454	153·6726	178·1194	47
48	90·8596	104·4084	120·3883	139·2632	161·5879	188·0254	48
49	94·1311	108·5406	125·6018	145·8337	169·8594	198·4267	49
50	97·4843	112·7969	130·9979	152·6671	178·5030	209·3480	50
60	135·9916	163·0534	196·5169	237·9907	289·4980	353·5837	60
70	185·2841	230·5941	288·9379	364·2905	461·8697	588·5285	70
80	248·3827	321·3630	419·3068	551·2450	729·5577	971·2288	80
90	329·1542	443·3489	603·2050	827·9833	1145·2690	1594·6073	90
100	432·5486	607·2877	862·6117	1237·6237	1790·8560	2610·0252	100

Compound Interest.—Table IV.

The Present Value of 1 per interval (payable at the end of each interval) for a given number of intervals.

No. of intervals.	2½%	3%	3½%	4%	4½%	5%	No. of intervals.
1	0·9756	0·9709	0·9662	0·9615	0·9569	0·9524	1
2	1·9274	1·9135	1·8997	1·8861	1·8727	1·8594	2
3	2·8560	2·8286	2·8016	2·7751	2·7490	2·7232	3
4	3·7620	3·7171	3·6731	3·6299	3·5875	3·5460	4
5	4·6458	4·5797	4·5151	4·4518	4·3900	4·3295	5
6	5·5081	5·4172	5·3286	5·2421	5·1579	5·0757	6
7	6·3494	6·2303	6·1145	6·0021	5·8927	5·7864	7
8	7·1701	7·0197	6·8740	6·7327	6·5959	6·4632	8
9	7·9709	7·7861	7·6077	7·4353	7·2688	7·1078	9
10	8·7521	8·5302	8·3166	8·1109	7·9127	7·7217	10
11	9·5142	9·2526	9·0016	8·7605	8·5289	8·3064	11
12	10·2578	9·9540	9·6633	9·3851	9·1186	8·8633	12
13	10·9832	10·6350	10·3027	9·9856	9·6829	9·3936	13
14	11·6909	11·2961	10·9205	10·5631	10·2228	9·8986	14
15	12·3814	11·9379	11·5174	11·1184	10·7395	10·3797	15
16	13·0550	12·5611	12·0941	11·6523	11·2340	10·8378	16
17	13·7122	13·1661	12·6513	12·1657	11·7072	11·2741	17
18	14·3534	13·7535	13·1897	12·6593	12·1600	11·6896	18
19	14·9789	14·3238	13·7098	13·1339	12·5933	12·0853	19
20	15·5892	14·8775	14·2124	13·5903	13·0079	12·4622	20
21	16·1845	15·4150	14·6980	14·0292	13·4047	12·8212	21
22	16·7654	15·9369	15·1671	14·4511	13·7844	13·1630	22
23	17·3321	16·4436	15·6204	14·8568	14·1478	13·4886	23
24	17·8850	16·9355	16·0584	15·2470	14·4955	13·7986	24
25	18·4244	17·4131	16·4815	15·6221	14·8282	14·0939	25
26	18·9506	17·8768	16·8904	15·9828	15·1466	14·3752	26
27	19·4640	18·3270	17·2854	16·3296	15·4513	14·6430	27
28	19·9649	18·7641	17·6670	16·6631	15·7429	14·8981	28
29	20·4535	19·1885	18·0358	16·9837	16·0219	15·1411	29
30	20·9303	19·6004	18·3920	17·2920	16·2889	15·3725	30
31	21·3954	20·0004	18·7363	17·5885	16·5444	15·5928	31
32	21·8492	20·3888	19·0689	17·8736	16·7889	15·8027	32
33	22·2919	20·7658	19·3902	18·1476	17·0229	16·0025	33
34	22·7238	21·1318	19·7007	18·4112	17·2468	16·1929	34
35	23·1452	21·4872	20·0007	18·6646	17·4610	16·3742	35
36	23·5563	21·8323	20·2905	18·9083	17·6660	16·5469	36
37	23·9573	22·1672	20·5705	19·1426	17·8622	16·7113	37
38	24·3486	22·4925	20·8411	19·3679	18·0500	16·8679	38
39	24·7303	22·8082	21·1025	19·5845	18·2297	17·0170	39
40	25·1028	23·1148	21·3551	19·7928	18·4016	17·1591	40
41	25·4661	23·4124	21·5991	19·9931	18·5661	17·2944	41
42	25·8206	23·7014	21·8349	20·1856	18·7235	17·4232	42
43	26·1664	23·9819	22·0627	20·3708	18·8742	17·5459	43
44	26·5038	24·2543	22·2828	20·5488	19·0184	17·6628	44
45	26·8330	24·5187	22·4955	20·7200	19·1563	17·7741	45
46	27·1542	24·7754	22·7009	20·8847	19·2884	17·8801	46
47	27·4675	25·0247	22·8994	21·0429	19·4147	17·9810	47
48	27·7732	25·2667	23·0912	21·1951	19·5356	18·0772	48
49	28·0714	25·5017	23·2766	21·3415	19·6513	18·1687	49
50	28·3623	25·7298	23·4556	21·4822	19·7620	18·2559	50
60	30·9087	27·6756	24·9447	22·6235	20·6380	18·9293	60
70	32·8979	29·1234	26·0004	23·3945	21·2021	19·3427	70
80	34·4518	30·2008	26·7488	23·9154	21·5653	19·5965	80
90	35·6658	31·0024	27·2793	24·2673	21·7992	19·7523	90
100	36·6141	31·5989	27·6554	24·5050	21·9498	19·8479	100

INDEX TO VOLUME I.

NOTES. (*a*) Where a subject is referred to on the bottom of one page and the top of the next, the number of the first page only is given in the Index.

(*b*) Where a subject is mentioned frequently on several successive pages, the number of the first page only is given, and this number is printed in heavy type.

(*c*) It was not thought advisable to index the references contained in the lists of reading. The numbers of the pages on which the lists appear are given in the index under the heading "Reading, Lists of," and, in order to assist students, certain papers which relate to more than one subject have been included in more than one list of reading.

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