

**CIHM
Microfiche
Series
(Monographs)**

**ICMH
Collection de
microfiches
(monographies)**



Canadian Institute for Historical Microreproductions / Institut canadien de microreproductions historiques

© 1995

Technical and Bibliographic Notes / Notes techniques et bibliographiques

The Institute has attempted to obtain the best original copy available for filming. Features of this copy which may be bibliographically unique, which may alter any of the images in the reproduction, or which may significantly change the usual method of filming, are checked below.

L'Institut a microfilmé le meilleur exemplaire qu'il lui a été possible de se procurer. Les détails de cet exemplaire qui sont peut-être uniques du point de vue bibliographique, qui peuvent modifier une image reproduite, ou qui peuvent exiger une modification dans la méthode normale de filmage sont indiqués ci-dessous.

Coloured covers/
Couverture de couleur

Covers damaged/
Couverture endommagée

Covers restored and/or laminated/
Couverture restaurée et/ou pelliculée

Cover title missing/
Le titre de couverture manque

Coloured maps/
Cartes géographiques en couleur

Coloured ink (i.e. other than blue or black)/
Encre de couleur (i.e. autre que bleue ou noire)

Coloured plates and/or illustrations/
Planches et/ou illustrations en couleur

Bound with other material/
Relié avec d'autres documents

Tight binding may cause shadows or distortion along interior margin/
La reliure serrée peut causer de l'ombre ou de la distorsion le long de la marge intérieure

Blank leaves added during restoration may appear within the text. Whenever possible, these have been omitted from filming/
Il se peut que certaines pages blanches ajoutées lors d'une restauration apparaissent dans le texte, mais, lorsque cela était possible, ces pages n'ont pas été filmées.

Additional comments:/
Commentaires supplémentaires:

Coloured pages/
Pages de couleur

Pages damaged/
Pages endommagées

Pages restored and/or laminated/
Pages restaurées et/ou pelliculées

Pages discoloured, stained or foxed/
Pages décolorées, tachetées ou piquées

Pages detached/
Pages détachées

Showthrough/
Transparence

Quality of print varies/
Qualité inégale de l'impression

Continuous pagination/
Pagination continue

Includes index(es)/
Comprend un (des) index

Title on header taken from:/
Le titre de l'en-tête provient:

Title page of issue/
Page de titre de la livraison

Caption of issue/
Titre de départ de la livraison

Masthead/
Générique (périodiques) de la livraison

This item is filmed at the reduction ratio checked below/
Ce document est filmé au taux de réduction indiqué ci-dessous.

10x	14x	18x	22x	26x	30x
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
12x	16x	20x	24x	28x	32x

The copy filmed here has been reproduced thanks to the generosity of:

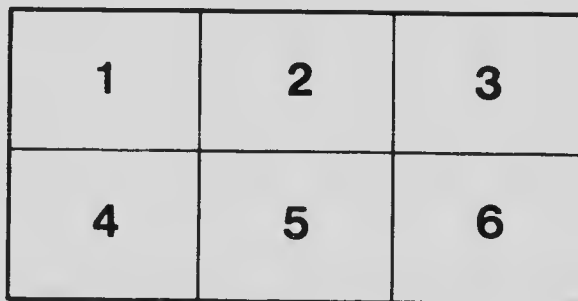
University of Toronto Library

The images appearing here are the best quality possible considering the condition and legibility of the original copy and in keeping with the filming contract specifications.

Original copies in printed paper covers are filmed beginning with the front cover and ending on the last page with a printed or illustrated impression, or the back cover when appropriate. All other original copies are filmed beginning on the first page with a printed or illustrated impression, and ending on the last page with a printed or illustrated impression.

The last recorded frame on each microfiche shall contain the symbol \rightarrow (meaning "CONTINUED"), or the symbol ∇ (meaning "END"), whichever applies.

Maps, plates, charts, etc., may be filmed at different reduction ratios. Those too large to be entirely included in one exposure are filmed beginning in the upper left hand corner, left to right and top to bottom, as many frames as required. The following diagrams illustrate the method:



L'exemplaire filmé fut reproduit grâce à la générosité de:

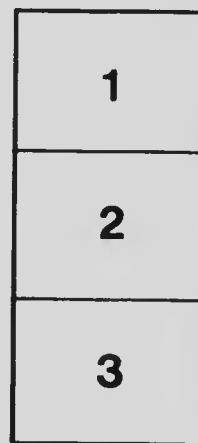
University of Toronto Library

Les images suivantes ont été reproduites avec le plus grand soin, compte tenu de la condition et de la netteté de l'exemplaire filmé, et en conformité avec les conditions du contrat de filmage.

Les exemplaires originaux dont la couverture en papier est imprimée sont filmés en commençant par le premier plat et en terminant soit par la dernière page qui comporte une empreinte d'impression ou d'illustration, soit par le second plat, selon le cas. Tous les autres exemplaires originaux sont filmés en commençant par la première page qui comporte une empreinte d'impression ou d'illustration et en terminant par la dernière page qui comporte une telle empreinte.

Un des symboles suivants apparaîtra sur la dernière image de chaque microfiche, selon le cas: le symbole \rightarrow signifie "A SUIVRE", le symbole ∇ signifie "FIN".

Les cartes, planches, tableaux, etc., peuvent être filmés à des taux de réduction différents. Lorsque le document est trop grand pour être reproduit en un seul cliché, il est filmé à partir de l'angle supérieur gauche, de gauche à droite, et de haut en bas, en prenant le nombre d'images nécessaire. Les diagrammes suivants illustrent la méthode.



MICROCOPY RESOLUTION TEST CHART

(ANSI and ISO TEST CHART No. 2)

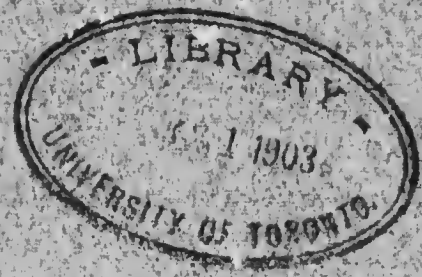


APPLIED IMAGE Inc

1653 East Main Street
Rochester, New York 14609 USA
(716) 482 - 0300 - Phone
(716) 288 - 5989 - Fax

3 1761 04203 5733

Proceedings of The Insurance Institute of Toronto



**ESSENTIAL FEATURES IN
LIFE ASSURANCE ORGANIZATION**

BY

T. BRADSHAW, F.I.A.

2ND VICE-PRESIDENT AND ACTUARY THE IMPERIAL LIFE
ASSURANCE COMPANY OF CANADA

President of the Institute

Compliments of the Author.

*ESSENTIAL FEATURES IN
LIFE ASSURANCE ORGANIZATION*

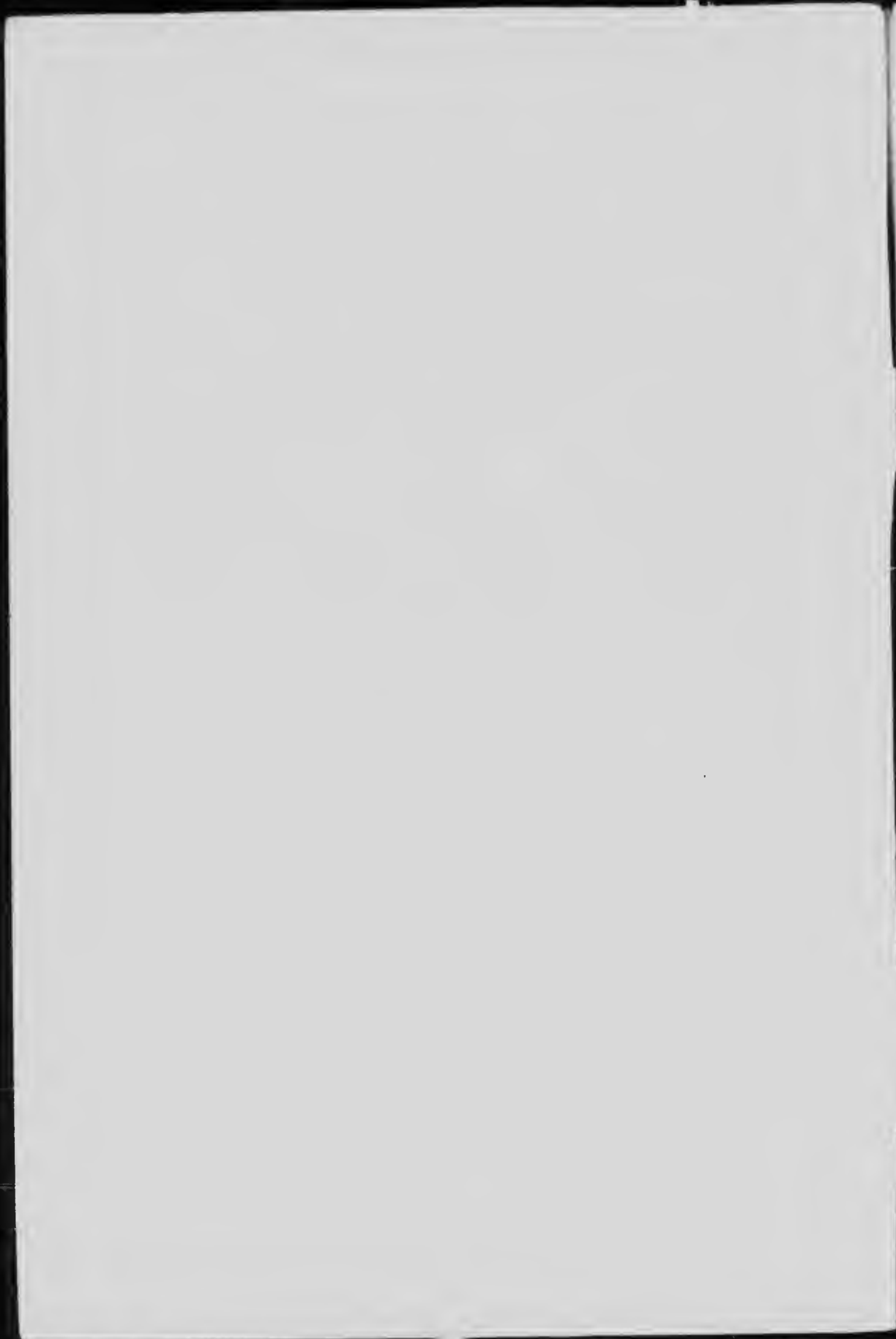
BEING

THE PRESIDENT'S ADDRESS
SESSION 1902-1903

BY

T. BRADSHAW, F.L.A.

No. 1. Vol. IV.



Essential Features in Life Assurance Organization.

READ BEFORE THE INSURANCE INSTITUTE OF TORONTO,
14TH NOV., 1902.

Gentlemen,—I am deeply sensible of the honor you have conferred upon me, by electing me to the Presidency of the Insurance Institute of Toronto, many of whose members are eminently better qualified than I for this important position. Relying upon the valued support of Council and Committees, by whom I have already been greatly helped and encouraged, I will endeavor to secure to the Institute during my term of office a continuation of that prosperity which has thus far attended its development—a prosperity due in no small measure to the ability and earnest efforts of my predecessors. As the least, may it be said that through my election the Institute suffered no real loss.

Imposed upon the newly elected President, by the unwritten law of custom, is the task of delivering an introductory address. In compliance with this law I will ask you to consider this evening my opening address to the Institute the reading of a **Topic of paper.** entitled "Essential Features in Life Assurance Organization." This paper will be it may furnish suggestions and be of interest to those engaged in the several branches of insurance which have been prepared especially for the benefit of those men who have either taken up life assurance as a permanent profession or who are considering the advisability of so doing.

It has become a recognized feature of life assurance management in some countries—in Canada to a certain extent—to departmentalize the work, and in this respect I have endeavored to define some of the departments which I believe every progressive life insurance company should establish, immediately its business warrants; the qualifications of the chief and his assistants in those departments; the duties which devolve upon them; the

opportunities which exist for them; and the benefits which accrue to the company through their being properly qualified. Many of the references throughout the paper, while capable of general application, are intended to apply specially to life assurance as conducted in Canada.

THE CHIEF OFFICER.

In every business or enterprise there must be some one to take the initiative, to look to for orders, to be responsible for success or failure. In life assurance that person is the President or Manager. He alone is responsible to his directors for the ups and downs associated with the business, and all the other employees of the company in the office and in the field are responsible to him. In Great Britain this position is almost invariably filled by one who has been technically trained for it—the actuary. In Canada and the United States this is not so frequently the case. In order to fill the position of chief officer most efficiently in the ideal life insurance office, the occupant should have had both technical training and experience.

In support of the foregoing view, I give the opinion of probably the most eminent living authority in the profession—Dr. T. B. Sprague, F.I.A. He said:—

“The one conclusion which my experience has impressed on me most forcibly is that the prosperity of a life office depends principally on the character of its chief officer; and that, if he is unequal to his work, directors, agents, shareholders, and friends, however influential, will labour in vain to promote the permanent prosperity of the office” (J.I.A. 25-79).

“The manager should himself be a skilled actuary, in order to discharge his duties in a thoroughly efficient manner” (J.I.A. 18-416).

“The aim of the founders of the Institute (of Actuaries)—to raise the status of the actuary—is summed up in the desire that the actuary should be the Manager of his office. I think it is better, however, to express the same thing in a slightly different way and to

say that our desire is, that the Manager of every office shall be an Actuary." (J.L.A. 24-242.)

As intimated, there is a sharp distinction between the position of the chief actuary in a British office and his position in a United States office. In Great Britain the chief actuary is invariably the principal officer, holding a position somewhat analogous to that of the president of a United States company. In the United States the chief actuary's duties are usually confined to problems relating to his own particular technical branch of work. In Canada, the chief actuary is generally either the chief officer or the second in command. His services are usually highly regarded, not merely on account of his technical knowledge, but on account of the general information which he possesses upon all matters pertaining to life assurance. Our Canadian companies will, it is believed, be all the better for following the usually sound views of the actuary—who has been described as the pilot of life assurance.

In the ideal company, I believe that the system in vogue in Great Britain would be the preferable, and that the chief officer, who is usually designated as manager, should be a qualified actuary.

THE ACTUARIAL DEPARTMENT.

The idea conveyed by the statement that the chief officer should be a qualified actuary does not presuppose that he should deal with all the actuarial minutiae; on the contrary, he will organize an actuarial department, at the head of which he will have a duly qualified actuary.

The authority whom we have already quoted says:—

“When the Manager of a large Office is an Actuary, it will be impossible for him to take personal charge of the actuarial department, and to supervise the calculations that are made in it. He must therefore be assisted by a competent Actuary, who will probably have the title of Assistant Actuary; and under him, again, will be a staff of skilled assistants, whose qualifications are

such that they are entitled to be called Actuaries." (J.I.A. 24-242.)

The question now naturally arises, what constitutes an actuary? and again the opinion of Dr. Sprague is worthy of being quoted:—

What constitutes an Actuary. "The rule may be distinctly laid down that an actuary is a Fellow of the Institute of Actuaries, or a Fellow of the Faculty of Actuaries in Scotland, and that no other person can properly take to himself the title." (J.I.A. 25-65.)

Since the foregoing view was expressed the Actuarial Society of America has come into existence, and I should add to what Dr. Sprague has said, "A member of the Actuarial Society of America."

Mr. C. D. Higham, F.I.A., in his recent presidential address to the Institute of Actuaries (J.I.A. 35-445), said in this connection:—

"We want no 'trade union,' nor that a man shall be prevented from computing and advising if he finds those who will trust him, but it ought not to be a grievance that the appellation in the United Kingdom should, after a short interval, be exclusively reserved for the Fellows of this Institute (F.I.A.), and of the Faculty of Actuaries in Scotland (F.F.A.)."

The suggestion made by Mr. Higham will no doubt become a reality in the United Kingdom, and in time, with certain additions or modifications, extend to the Colonies. While the profession of an actuary has not as yet in the United States or Canada received that recognition that it has in Great Britain, it is steadily and surely rising in dignity and importance.

There are two actuarial bodies, holding examinations annually in this country, which assist students to become actuaries—the Institute of Actuaries of Great Britain, incorporated by Royal Charter 1884, and founded in 1848, generally recognized as being the most important institute of its character in the world, and the Actuarial Society of America, founded in 1889.

The course of study prescribed by the Institute of Actuaries of Great Britain is a most liberal one, and

LIFE ASSURANCE ORGANIZATION.

if a student is successful in all the four examinations he is justly entitled to the degree F.I.A.—“Fellow of the Institute of Actuaries.” He receives, however, after successfully taking the first two examinations, the degree A.I.A.—“Associate of the Institute of Actuaries.”

The following are the subjects of the examination:—

1st.—(1) Arithmetic and Algebra.

(2) The Theory and use of Logarithms.
Examination of Institute of Actuaries. (3) The Elements of the Theory of Probabilities.
(4) The Elements of the Calculus of Finite Differences, including Interpolation and Summation.

2nd. (1) Compound Interest and Annuities-Certain.
(2) The application of the Theory of Probabilities to Life Contingencies.
(3) The Theory of Annuities and Assurances on Lives and Survivorships.
(4) The principles of the construction of Mortality Tables (excluding graduation); and the construction of monetary and other Tables involving the Contingencies of Life.
(5) The elementary application of the Calculus of Finite Differences and of the Differential and Integral Calculus to Life Contingencies.

3rd. (1) The methods of constructing and graduating Mortality, Sickness and other Tables.
(2) The history and distinctive features of existing Tables.
(3) The Valuation of the Liabilities and Assets of Life Assurance Companies.
(4) The Distribution of Surplus.
(5) The Calculation of Office Rates for Assurance, Annuity, Sickness and other risks.
(6) The practical valuation of Life Interests and Reversions, and of Policies for surrender or purchase.

4th.—(1) The Elements of the Law of Real and Personal Property.

- (2) The Law relating to Life Assurance Companies and Life Assurance Contracts.
- (3) The Constitution and Valuation of Friendly Societies and Pension Funds, and the Laws relating to such Institutions.
- (4) Life Assurance Book-keeping; preparation of Schedules, Statements and Reports.
- (5) The Principles of Banking and Finance, including a knowledge of the Constitution and Operations of the Bank of England, and of the National and Local Debts of the United Kingdom.
- (6) The Investments of Life Assurance Companies.

The Institute has been considerate in arranging that the examinations be held in Canada, taking place in April each year at Montreal, Ottawa and Toronto. The same papers are prepared for all students taking the same examination. The papers for this colony are transmitted to a supervisor at the centres named, under covers which are opened in the presence of the students on the day of the examination. The sheets containing the answers are enclosed by the student in envelopes, sealed by him, and then handed back to the supervisor, who transmits all to the Institute authorities in London, England, for examination. The percentage of successful candidates for the past five years will, no doubt, prove of interest to intending students:—

Years.	Part I. Per cent.	Part II. Per cent.	Part III. Sec. A. Per cent.	Part III. Sec. B. Per cent.
1902	65	28	44	50
1901	59	19	33	68
1900	47	33	23	30
1899	49	34	28	34
1898	55	28	46	32

The examinations of the Actuarial Society of America treat almost entirely with actuarial problems. These examinations are but two in number, and are thoroughly characteristic of the duties

of the United States actuary and his scope of work.

Examination of Actuarial Society of America. The student, if successful in the first, may be enrolled as an Associate, and if he subsequently passes the second, he is admitted to *membership* in the Society. The following are the subjects dealt with in the two examinations:—

Examination for enrollment as an Associate:—

(1) Arithmetic, Algebra and Plane Geometry, including the theory and use of Logarithms.

(2) The Principles of Double Entry Book-keeping; the elements of Compound Interest, including Annuities-Certain.

(3) The Doctrine of Probabilities; the elements of Interpolation.

(4) The application of Mathematics to Life Contingencies, including the theory and use of Commutation Tables, the computation of Premiums for Term, Ordinary and Limited Payment Life and Endowment Policies, and also for Policies with return of premium, and the different methods of computing Reserves; all the above for single and for joint lives.

(5) Practical examples in the foregoing subjects.

(6) General nature of Life Insurance Contracts; the outlines of the history of Life Insurance, and the source and character of the principal Mortality Tables.

Examination for admission as a Member:—

(1) Methods of constructing and graduating Mortality Tables and the use of formulas of Gompertz and Makeham.

(2) Methods of loading Premiums to provide for Expenses and Contingencies.

(3) Valuation of the Liabilities and Assets of Life Insurance Companies.

(4) The Assessment of Expenses and the Distribution of Surplus.

(5) Practical treatment of cases of Alteration or Surrender of Life Insurance Contracts.

(6) Application of the Calculus of Finite Differences and of the Differential and Integral Calculus to Life Contingencies.

(7) Laws of the United States and Canada relating to Life Insurance.

(8) Insurance of Under-Average Lives and Extra Premiums for Special Hazards.

We have said that the head of the actuarial department should be a duly qualified actuary, and have indicated the steps usually taken nowadays to become such. There is no department in a life assurance organization which requires greater technical skill, combined with good business judgment. If premium rates are faulty, if valuations are carelessly made, or sound principles relating thereto ignored; if surplus is inequitably apportioned; if surrender values have not been calculated with a due regard to actual and prospective conditions, a serious injury to the whole organization will undoubtedly result, and for these and many other conditions the actuary must be responsible. The work which the actuary has to perform or direct deals with matters vitally essential to the well being of the institution.

While he should be a good mathematician, he should also be a man of practical ideas. There is no end to the number of schemes of assurance which an actuary will be able to suggest, but many will be found quite impracticable.

He should be in sympathy with the members of the field staff, in order that he may the better appreciate the enquiries which they make from time to time, and the competition they have to meet, thus being in a position to aid the agent, thereby adding to the company's prestige and success. A field training of some months, or an occasional visitation among the agents will prove invaluable to the actuary. He will get many practical and valuable suggestions from agents—for it is a well known fact that some of the most popular forms of assurances of to-day originated with the field worker. The actuary should also be in touch with the wants of the public, for by that means he will be able to suggest forms of policies, changes in contracts, etc., which will tend to make his company

popular and progressive. He should have an accurate knowledge of all standard mortality tables, that he may be able to determine which table is the best for each separate requirement. A mortality table which might be deemed suitable for the computation of life assurance premiums might not do at all for the determination of annuity rates. Conditions are continually changing in life assurance, and the actuary should keep himself informed concerning them. As an example, the "British Offices Life Tables" have recently been made public; and it is the actuary's place to determine whether he shall recommend to his chief officer that the new tables be substituted for the old in the calculation of premiums, reserves, etc. Another example is the variation constantly taking place in interest earnings, and this latter condition is certainly one which necessitates judicious treatment.

The proper training of assistants is one of the most important duties of a competent actuary.

Actuarial Every actuary should have under him a
Assista staff of assistants of such education and attainments as to entitle them to be called actuaries, or to enable them in due time to reach the required standard. I think it should be laid down as a principle by the actuary in charge, that each member of his staff must pursue the studies necessary to qualify him as an actuary. The effect of this would be that a group of thoroughly efficient men would always be available for important and responsible positions in the company.

The educational training which an assistant should have previous to entering an office, is a subject regarding which there are many opinions. I think it is quite safe to say that as a minimum he should have passed an examination at least as important and as comprehensive as the honor matriculation examination of say Toronto University. Personally I should prefer to select an assistant who had successfully taken up the first year's work or the first two years' work in Arts in a university graded about the same as Toronto University. I think that a first or second year university

student will make a better and more efficient assistant than a student who has taken the full Arts course, unless the student can have entered the university sufficiently early to be still comparatively young when graduated. If somewhat advanced in age, the graduate is more difficult to train, his long and severe course of study upon set lines has a tendency to make him too theoretical, his business faculties have been undeveloped for too long a period, and the result is that it becomes more difficult for him to appreciate the practical problems with which he has to wrestle. A young man fresh from college, having matriculated as indicated, or having successfully passed his first or first and second year's examinations, should, without much reviewing, successfully write upon the first examination of the Institute of Actuaries; while his previous academic training will render the work of subsequent examinations less difficult.

The actuary and his assistants should cultivate the habit of writing on subjects pertaining to their profession—articles for, or letters for Actuarial Assistants. to the insurance journals, or "literature," for their company. It assists the student to express himself with greater ease and freedom, gives him confidence in himself, and acts as a healthy stimulus to investigation. They should be constant and persistent readers of the transactions of all insurance and actuarial societies, and of certain representative insurance periodicals.

Apart from the ordinary routine pertaining to the old business, there are many duties which the actuary and his assistants will be called upon to perform—the calculation of new premium rates, of rates for special policies, of policy values, of annuity rates and values, of surrender values, of the expected loss, etc., etc. Original investigations and tests will be instituted from time to time. Investigations of the rate of mortality according to place, occupation, mode of life, or race, will be frequently undertaken by the actuary. The proper, equitable and best way to determine how distinctions arising out of these different conditions should

he made, is a problem which is constantly demanding solution.

The actuary and his assistants should always be alert to the requirements of the public. The placing before the public of a new plan of assurance having merit, or of an old plan dressed in a new garb, will sometimes assist in attracting additional new business, stimulate the agency staff, and tend to make the company more popular and progressive. Assistants especially should be encouraged by their chief to undertake work of this character, and they themselves should be sufficiently interested in their profession, and in their particular office to make original suggestions. Changes are constantly being made in the policy contract of assurance, the modern tendency being to make the policy simple, and more liberal in its terms. The more simple and attractive, of course, with safety to the office, the more easily will it be interpreted, and the more will it commend itself to those seeking insurance. The actuary's training and studies should cultivate in him the use of concise, direct and simple language; such being the case, he should be able to assist in remodelling the policy forms of the company as required. The company's "canvassing literature" also affords a wide avenue for the capabilities of the members of the actuarial staff. The aim of each member should be how he can best forward his company's interests, and in the efforts made to do this he will effectively forward his own. Every effort made strengthens him to a more efficient performance of his next duty, gives him added experience, enables his chief to rely more implicitly upon him, and thus brings to him added responsibilities, more important duties and sure promotion, with corresponding increase in emolument.

The field for actuarial workers is limited. Our largest companies have a staff of not more than nine, while in many offices three or four assistants will be the maximum.

Field for Actuary's Assistants. Those who contemplate embarking upon the actuarial profession, may find it somewhat difficult to get a position in the actuarial department of

in life office, on account of the limited staff required and the limited number of companies in Canada, although for our population the number is far beyond what it should be. It is not necessary for the staff of an actuarial department to increase so rapidly as the staffs in the other departments of a progressive office. If a young man is fortunate in being properly located in a well organized and efficiently conducted actuarial department of a progressive life assurance company, and he displays an aptitude for the theoretical and practical development of the work, he is bound to rise.

THE MEDICAL DEPARTMENT.

The chief medical referee, as head of the medical department, in the determination of those lives which are safely assurable, performs one of the most important duties involved in life assurance economies.

Care in selection of lives. The careful selection of lives lies at the threshold of successful life assurance. Let there be laxity in this one feature and all must suffer—policy holders, shareholders, officers and agents. On the other hand, if conspicuous care is displayed it is at once evidenced in the yearly accountings which are always analyzed and criticized by friends and foes. Mr. J. W. Alexander, President of the Equitable Life Assurance Society of the United States, in a recent address, referring to the selection of risks said:—

“This side of the management of a life insurance company is of the first importance. . . . A half million dollars in the death claims for one year in one of the largest companies may be saved by the application of wisely directed attention with far greater ease than one hundred thousand dollars can be saved in expenses.”

Local Medical Examiners. It cannot be supposed that the ordinary local medical examiner will have much more than a layman's knowledge of life assurance, but it is essential that the chief of the medical department shall have a clear comprehension of the underlying principles. In

some companies the local medical examiner is not even asked whether he recommends the applicant for assurance. All that is required of him is to make the personal examination as called for by the blank, and obtain by enquiry information from the applicant, according to questions proposed, concerning his personal and family history. The medical referee then determines the eligibility of the life. In most of the medical reports, however, the local examiner is asked whether he considers the life safely assurable on the system proposed, and whether he regards the applicant as a first, second or third class life. The misconception which local examiners have of the various systems of assurance have no doubt influenced some companies not to seek their recommendations, but instead, to form an independent opinion of the life, based on the answers to questions proposed.

Advantage of actuarial knowledge to Medical Referee. If companies were to adopt the old principle of rejecting all lives which do not come up to a certain necessarily high standard, a comparatively small knowledge of life assurance on the part of the medical referee would suffice, but to-day some of the best companies here, in Great Britain and in the United States accept lives which require some special modification in the system of assurance, in the amount of assurance, or in the premium, and it is particularly in dealing with this gradually increasing class, that the medical referee would find his work much more intelligible, and himself much more confident if he possessed actuarial knowledge. The following are cases where some modification, as referred to above, would become necessary:—

- (a) Where the hazard diminishes with age, as in the case of a young man whose family history is tainted with phthisis.
- (b) Where the hazard increases with age, as in the case of a young man, a member of whose family has died of apoplexy, gout, etc., diseases which usually threaten life only after middle age.

- (c) Where the hazard is permanent throughout life, as in the case of a person following a dangerous occupation.

At the present time, when a life is below the normal, the actuary is generally consulted by the medical referee, in order to find out what method should be adopted, if the life is to be accepted at all, to compensate the company for its imperfections. The medical referee indicates to the actuary the extent of these imperfections and their likely effect upon the life of the applicant. The actuary determines the money value of the defects, and how best that money value can be secured, whether by increasing the normal premium, shortening the term of the assurance, or making the assurance in the early years small and gradually increasing it from year to year until a maximum is reached. It will thus be seen that united action of the medical referee and the actuary becomes indispensable. But the same results could be reached if the medical referee were himself an actuary, and in a much more satisfactory manner, for it is difficult for the actuary to get the nice point of view of a case that the chief medical officer has from a careful study and analysis of the subject in the light of his professional medical knowledge, and at the same time it is difficult for the medical referee to realize the exact effect of the proposed modification, suggested by the actuary, and whether it is the best in the particular case. It would, therefore, appear that the ideal medical referee should have actuarial knowledge, as with this knowledge he would bring to bear in the discharge of his duties a more intelligent, a more skilful, and a more just judgment. In this connection, however, I am not insensible of the benefit to be derived from the two independent judgments, although I believe the opinion of a thoroughly grounded actuarial-physician, able to view the case from all points, would be better than the combined judgment of a physician and an actuary who have to explain to each other their respective standpoints, when it must be expected that some

LIFE ASSURANCE ORGANIZATION.

of the impressions which have been mentally noted cannot be conveyed by language.

Such an officer will have a just appreciation of the life table upon which premiums for whole life assurance are based, and will not fall into the error which has misled more than one medical referee

of assuming that because an applicant in the judgment "is good enough for age 70," the risk is a first-class one. A knowledge of the construction of the Institute of Actuaries (Hm) life table would indicate to him that the last surviving life assured dies after age 98, and that each individual life assured on the whole life system would have the prospect of reaching that age. The usual course for a medical referee to follow in dealing with a risk, is, after a full consideration of the facts in hand, to ask himself the question, "To what approximate limit of life will the applicant attain?" After settling this question he adjusts the system of assurance, the premium, or the sum assured accordingly. Without actuarial knowledge, or actuarial advice, this would be impossible.

Unless the medical referee has an accurate knowledge of the many systems of assurance he is placed at a serious disadvantage. The following actual cases will serve as illustrations:—

1. An applicant applied for a whole life assurance, with mortuary additions for 20 years, of 50 per cent. of each gross annual premium. The risk was accepted subject to a lien, running off gradually in 20 years. The fact that the system provided for a gradually increasing risk for 20 years was not appreciated—if it had been, the mortuary addition feature would have been eliminated.

2. An applicant applied for a "20 year pure endowment" form of policy—the agent, through oversight, had the applicant examined. The family history was defective. The medical referee reported the risk declined. Had he known that the poorer the life the more acceptable was such a risk to the company for this form of policy, he would not have fallen into this error.

3. An applicant applied for a \$1,000 contract which combined the elements of endowment assurance and annuity; the financial effect of which was that the reserve under the contract at the end of 15 years was greater than \$1,000. The life did not exhibit signs of vitality beyond a period of 15 years. The medical referee recommended the acceptance of the risk on the 15 year endowment assurance system, not realizing that the system applied for was more favorable to the company than the suggested modified one.

The question of occupation also, is one which would be dealt with more strongly by a medical referee if he were grounded in the theory of life contingencies.

Certain occupations are beneficial to health and longevity; others again are detrimental to health and tend to shorten life. By this

it is not to be inferred that there should be a special rate for each distinct occupation. Those occupations having mortality rates closely approximating may be considered under one broad head, but in those cases in which the mortality is materially greater than the average, it becomes necessary to charge an extra premium. For example, it is a well established fact that those engaged in the liquor business are subject to a mortality very materially greater than that of the general population. The reports of the registrar-general of births, marriages and deaths in England show that this excess amounts to no less than 50 per cent., and the Scottish Amicable's experience proved that liquor sellers assured in that office had a mortality more than 50 per cent. greater than that of its other members. Practically the same condition was found to exist when analyzing the experiences of the Standard Life, the Law Life, the Life Association of Scotland, and the North British Mercantile Life.

There would appear to be no one more able to determine the probable effect of occupation upon the individual life than a physician, and while ordinarily, he would not be fully acquainted with the true extent of the increased risk of any particular hazardous class, yet if he possessed actuarial, as well as medical skill,

he would be able to determine the money value of the extra mortality in

Illustrations are not lacking where the medical referee and the actuary, working jointly, have produced most valuable contributions to medical life assurance.

In 1888 Dr. A. H. Smee and T. G. Ackland, F.I.A., chief medical adviser and actuary, respectively, of the Gresham Life Assurance Society, published their first edition, and in 1890 their second edition of a treatise "On the Assurance of Lives Liable to Service in Military and Naval Operations at Home and Abroad."

This work has been received with marked favor by the profession.

H. W. Manly, F.I.A., actuary, Mutual Life Assurance Society (England), and Dr. F. Glover Lyon, one of the medical officers of the same society, each contributed a paper on Consumption at a meeting of the Institute of Actuaries in February, 1892. Mr. Manly's paper was entitled, "An attempt to measure the extra risk arising from a consumptive family history when the life proposed for assurance is physically sound and healthy," and Dr. Lyon took for his subject, "Remarks on consumption in relation to life assurance."

Medical and actuarial science worked together in a most efficient and practical manner when it produced that invaluable guide in the selection of risks, "Medical Hand-book of Life Assurance," the joint production of Dr. Jos. E. Pollock and Jas. Chisholm, F.I.A., F.F.A., physician and actuary of the Imperial Life, England.

Another publication which clearly bears the impress of the joint labors of the actuary and the physician, is "Causes of death among the assured in the Scottish Widows' Funds Life Assurance Society, 1874-1894." This work is well worthy the perusal of all students of life assurance, and forms a most valuable contribution to the science. Claude Muirhead, M.D., F.R.C.P.E., medical officer of the society, the author, says in the preface concerning certain elaborate tables:—"These tables have been prepared by Mr. Turnbull (F.F.A., F.I.A.) and his assistants in the actuarial department

of the office, but more immediately under the superintendence of Philip C. McKean, F.F.A., to whom I am largely indebted for liberal assistance and valuable advice in the preparation and revision of this report."

Dr. Leslie Ogilvie, B.Sc., M.B.Ed., M.R.C.P. London (Trans. Act. Soc. Ed., IV.-88), says:

Analysis of life assurance statistics. —"The medical analysis of the statistics of Life Insurance Companies is a matter of great difficulty; but I have often thought that the most valuable information on the subject of Life Assurance is actually buried in the safes of the Companies." If our medical referees and their assistants had a comprehensive grasp of the theory of life assurance and the elements of statistics it would not be long before the mine of wealth which Dr. Ogilvie refers to would be giving forth its treasures. But the fact is that, comparatively speaking, very little use is made of this material, and principally, I believe, because the actuary has not sufficient medical skill to deal with it, nor the physician sufficient actuarial knowledge to enable him to reduce it to a useful practical basis. Dr. Ogilvie adds in the same paper (page 98):—"Might not both professions (medical and actuarial) be even more closely associated than at present, in a constant endeavor to increase by every available means our statistical knowledge?"

Along the same lines, Mr. Geo. M. Low, F.I.A., F.F.A., F.R.S.E., says:—

"What would be of the greatest service in the business of life-assurance would be an enquiry of the kind illustrated in Mr. Manly's paper, but conducted on a basis sufficiently wide to give thoroughly reliable data, and embracing not one branch of enquiry only, but all those groups and classes of cases presenting extra risk which most ordinarily occur in practice. It seems highly probable that the results would modify various current views and theories—would show that in the general practice of Offices some points receive too great importance, and would bring into prominence others that at present are too much overlooked. However that might be, there can be no doubt as to the value that would attach to reliable statistics showing even approxi-

mately for different classes of under-average risks, what extra rate of mortality is really involved. There is plenty of material in the Offices for such an enquiry. It has frequently been suggested, and, although as yet the idea has not advanced beyond the stage of suggestion, it may be hoped that some day the Offices will awaken to its importance, and that the inquiry will be undertaken on a sufficiently wide and comprehensive basis. It will be a work of great labour and it will call for the joint exercise of medical and actuarial skill—the medical to group appropriately the various special features in personal and family history to be dealt with, and to refer individual cases to their proper groups, and the actuarial to tabulate the results and bring them into a form suitable for practical use.” (Trans. Act. Soc. Ed., IV.-121.)

Mr. R. D. Miller, F.F.A., in his very interesting paper, entitled “A Confession of Faith,” read before the Insurance Institute of New South Wales in July, 1902, said:—

“In passing, I would like to say that there are many phases in our business in which either the physician or actuary alone is utterly useless; but when they join their forces we have a powerful combination capable of solving many a knotty problem.”

As we have actuarial assistants to perform the detail work of the actuarial department, so we must have medical assistants to assist the medical referee in the medical department. It is also essential that an assistant in this department should be specially qualified for the position, and to say that he should be possessed of both medical and actuarial skill is surely not setting too high a standard.

The medical department, to one who takes a broad, business-like and scientific interest in his work, is one of the most interesting in life assurance practice. Almost every day enquiries are made to other offices relative to unfavorable action taken by them upon applications. Most absurd replies have been received, indicating on the part of the one answering the enquiry

Some details of medical department.

(be he officer or clerk) entire ignorance of what he was recording. If the enquiry were answered by a medical-actuary assistant, these absurdities would not occur, the office giving the information would be saved from ridicule, and the office receiving it would obtain satisfaction. It not infrequently happens that the defects of an applicant, and the reasons why an extra premium, a modified system of assurance, or a lien, is proposed, have to be explained in order to secure the applicant's consent to the suggested modification. The medical-actuary, or his assistant, will be the best equipped person to do this. In the details associated with the appointment of medical examiners—such as enquiring into their credentials,

e., the assistant in the medical department, who has medical knowledge and a just appreciation of the qualities which a medical examiner should possess, will be able to perform the work intelligently. In the investigation and examination of death claims, actuarial and medical knowledge are almost always essential, and the person having this duty in hand should be equipped accordingly. The correspondence conducted by the medical department with the company's medical examiners and agents, will be all the more satisfactory if the officer or his assistant has not only medical knowledge, but also assurance knowledge.

Medico-assurance experience will assist materially in the intelligent and efficient keeping of the records of the medical department. It is **Medico-assurance experience desirable.** most important that the cause of death be accurately noted, for future reference and for statistical purposes. Unless this is done the experiences which may be taken out will be faulty and unreliable.

An instance where the possession of medical knowledge by the assistants in the medical department was important, was the furnishing recently of data by the various companies to the Actuarial Society of America for the purpose of bringing out the specialized mortality table. It was not to be expected that the medical referee could go over the great mass of material from which the desired information was to be extracted.

requiring months of close application, and it could hardly be delegated to clerks having absolutely no medical knowledge. No doubt in some offices the work was placed in the hands of such clerks, in which event it cannot but be inferred that the desired facts were not recorded. The new method which has been adopted by the United States life companies, and by some Canadian life companies, of reporting defective risks, calls for more than mere clerical work—if this work is to be done accurately and thoroughly, it must be performed by a person possessing medical knowledge.

There are many other duties which might be referred to, requiring medical training, but sufficient has been said to indicate that our companies should see that their medical departments are equipped with young men who are training themselves scientifically for the technical work in which they are engaged, and it believes the young men in the medical departments of our companies, and those who desire to become leaders in this branch of life assurance, to make the best of their opportunity to acquire accurate actuarial and medical knowledge.

THE ACCOUNTANCY DEPARTMENT.

The model office will, of course, have a strong accountancy department, and in this branch of life assurance there is ample scope for originality to men of capacity and clear conception. I do not think the proposition will be questioned that the chief accountant should not only be a practical accountant, but that he should thoroughly understand the underlying principles of accountancy. In this province we have an Institute of Chartered Accountants,

and it would appear that the chief accountant of a life assurance company, with head office in this province, should have demonstrated his fitness for the position either by having successfully passed all of its examinations, or in some other satisfactory way. Moreover, it should be the aim of every clerk in the accountancy department to qualify himself for the examinations of this body.

and thus be in a position to secure promotion when his time arrives.

Should the chief accountant of a life assurance company be an actuary? There are many instances of this actually being the case, and it may be safely assumed that the trained accountant who has passed say the first two examinations of the Institute of Actuaries of Great Britain, or the first examination of the Faculty of Actuaries, or the first examination of the Actuarial Society of America, or the examinations of the Federation of Insurance Institutes, will be able to perform his duties in a stronger, broader and more efficient manner. I do not think that it is suggesting too high a standard to say that the assistants in the accountancy department should prepare themselves for the examinations of the Federation of Insurance Institutes.

The examinations can be taken up gradually, and will undoubtedly not only benefit the assistant and the office, but will prove a most interesting and valuable study, and possibly lay the groundwork for more important studies in some of the other institutes. The training which a young man receives by systematic study, and the strength and self reliance which come to him, by virtue of having to dig and delve along the line of a particular branch of knowledge, are invaluable. If successful, as almost every young man will be, if he be honest with himself in his study, it creates enthusiasm for his profession, gives him a deeper interest in it, and enables him to render better service to his office.

The work of accountancy in life assurance is not always accorded the status which it rightly deserves. From a knowledge of the system in vogue in some offices, I do not wonder that office work in them is uninteresting and dull—in fact, it may be said to be stale and unprofitable. The alert, bright and up-to-date life assurance accountant will tell you that there is a constant change going on in the treatment of office details, and that he welcomes any innovation which is calculated to reduce labor, to facilitate the conduct of

the work and to make it more efficient. Mr. R. P. Hardy, F.I.A., said in this connection (J.I.A., 32-443). "To frame a scheme of books and forms that were at once analytical and interlocking, presenting at the same time the maximum of convenience for the needs of to-day, encumbered by the mere minimum of what was indispensable for the emergency wants of the future, was in itself a liberal and highly stimulating education."

The chief of an office should encourage his assistants to present any new method which they believe has merit. There is no office which has now or ever will have a perfect system, but it should be the aim of every office

to improve its system, to introduce more effective checks, and a more perfect interlocking of the records one with another.

Briefly, it may be said that:

1. The system should be analytical.
2. The system should be interlocking.
3. The system should be convenient and require a minimum of labor.
4. The system should be a checking one.
5. The system should give accurate informatica.
6. The system should be adapted to the requirements of the Government returns.

Mr. A. D. Lindsay Turnbull, A.I.A., F.F.A., says along these lines:—"As every office, or nearly every office, is increasing its business at a very rapid rate, and as the Public is more and more feeling the necessity for Life Assurance, a decided effort should be made by all to still further simplify, if possible, the practice of book-keeping." (Trans. Act. Soc. Ed., IV.-188.)

And Mr. John J. McLaughlin, F.F.A., says:—"In considering the subject it is necessary to keep steadily in view the objects to be attained by Life Assurance Book-keeping. These are:—

- (1) To afford ready information as to the financial transactions of the Office with every individual with whom it does business, providing in the case of persons with whom there are continuous business transactions, and periodical settlements, a regular account:

(2) To record fully the intrusions of the officials with the funds of the Office;

(3) To classify the various transactions of the Office so as to produce at the end of the year (a) a revenue account and (b) a balance sheet, in the forms prescribed by the Life Assurance Companies Act, 1870, with such further details in the case of each as it may be desired to place on record." (Trans. Act. Soc. Ed., II-75.)

Mr. Turnbull in his paper adds two others:—

"(4) To enable the Directors, or at least the Manager to know, with full particulars, the total cost of New Business and the expense of carrying on Old Business.

(5) To enable the Company's Auditor, without inconvenience to his staff or that of the Office, to make a thorough audit in a reasonable time, and besides, the system should be such that the clerks will not be apt to make mistakes, and, when an error has been made, they should be in a position to readily notice and quickly locate it."

If the company is doing business outside of Canada, as for example, in the United States or Great Britain, the system should lend itself to producing conveniently the statements required by the country in which the office is transacting business.

The following, among other points, have **Points to be kept in mind.** been suggested as being important for the accountant and his assistants to bear in mind:—

(1) To determine the uses and object of each book, and the circumstances under which the information recorded will be required.

(2) A thorough acquaintance with the underlying principles involved in the particular set of books used in the office.

(3) How these principles can be best applied to new conditions.

(4) The effect of the discontinuance of one or more books.

(5) The introduction of better books or methods, in order to obtain the desired results, keeping well in mind that it is important to preserve an easily acces-

sible record of each transaction, and to combine the results of all the transactions.

(6) The importance of reconciling one year's receipts with those of the preceding year, and analyzing and accounting for the difference.

(7) An analysis of the accounts of his own office, as well as those of other offices, as disclosed in Government returns.

In connection with the foregoing the following remarks are appropriate:—

"To those who wish to qualify themselves for promotion to positions of responsibility, **Habit of independent thought.** that they cannot begin too early to cultivate habits of independent thought—first of all to enquire the reason for every precaution that they find is taken in business, and the reason of every rule that is laid down for their guidance, and subsequently to consider whether the present course of procedure can be in any respect improved."—Dr. T. B. Sprague (Trans. Act. Soc. Ed., 1-287).

I would also suggest that the masterly work of Dr. Sprague, on "Life Insurance Accounts" be studied by every life assurance accountant and assistant. Although it does not apply to life assurance accounts as made up under the Dominion Insurance Act, it contains many valuable suggestions and helps.

Suggestions for the Office Assistant. In leaving this branch of work I would strongly urge upon every young man who is engaged in what may be termed general office work, to observe the following:—

(1) To improve early education by such studies as he may find himself most deficient in, and which will most assist him in his present duties.

(2) To prepare himself for some examination in accountancy—either the examinations of the Institute of Chartered Accountants of Ontario, or the examinations of the Federation of Insurance Institutes of Great Britain, the object being to have some goal in view and to attain it.

(3) To continue his studies along actuarial lines, and prepare himself at least for the first two examinations of the Institute of Actuaries, the first examination of the Actuarial Society of America, or the advanced examination of the Federation of Insurance Institutes.

(4) To analyze, compare and study the annual reports of life assurance companies, as published by the companies, and as contained in Government returns.

(5) To read carefully all criticisms and notices on life assurance annual reports, as contained in the insurance and financial journals—published here, in Great Britain, in Australia and in the United States.

(6) To critically examine the financial statements and reports of commercial and financial enterprises.

(7) To thoroughly adapt himself to the records of his own office and always keep in view the idea of how he can improve the existing system, remembering that the intricacies of life assurance demand special forms of record, and consequently, afford abundant scope for originality.

“Change of circumstances should be at once recognized, and every modern invention that seems likely to be a real improvement, should be adopted—not perhaps immediately it is brought out, but immediately after there is good reason to think it will be an improvement.”
Dr. Sprague. (Trans. Act. Soc. Ed., I-276).

INVESTMENT DEPARTMENT.

The model office will have an investment department, controlled by an officer who is a specialist in finance; and who will be responsible to the chief officer of the company. It may be advocated that the investment department of a life company should be under the especial care of the chief officer of the company. This department of a life company is one of the most important, for if the funds of a company are injudiciously invested, a disaster will surely result, and thus it is that the investment of the funds of a company demands such close attention, such special aptitude that it requires the un-

divided attention of some one person, and this the chief officer of a model office is unable to give.

The two major sources of profit of an assurance company arise from care in the selection of lives and the interest earned on the accumulations beyond the rate of interest at which the reserves are maintained. The aggregate experience of 39 United States companies for the year ending December 31st, 1901, as reported to the State of Connecticut, showed that 48% of the total profits arose from excess of interest earned over and above that required to maintain reserves, and 37% from favorable mortality. Mr A. H. Bailey, F.I.A., states that:—"Of the two main elements on which all life assurance transactions depend—the rate of mortality and the rate of interest—the latter, I think, affords more scope for the exercise of judgment and skill than the former. . . . There can be no doubt that the amount of interest realized on the assets can be materially influenced by the degree of judgment and knowledge brought to bear upon the subject." (J.I.A., 10-143.)

The training and experience of the actuary especially qualify him to deal with the investment of the company's funds. The question as to what proportion of a company's funds should be invested in certain classes of securities is one which can best be determined by the financial actuary. A certain minimum rate of interest, dependent upon the rate assumed in the actuarial calculation of the office will require to be obtained. Again, this officer should be careful to see that the time for which investments are made has some relation to the duration of the assurance contracts entered into. He should be able to advise what classes of securities are most suitable for his particular office; and what interest yield rate should be expected, inasmuch as the rate of interest is a co-efficient in all assurance and annuity calculations. Of course, the final decision regarding all investments will lie with the directors, who are generally men of prudence and ability.

The selection of risks is made daily by one or more trained men, and inasmuch as the greater part of a life office's profits results from the judicious investment of funds, the selection of securities should also have continuous thought, and be in the hands of a thoroughly trained man, having a just appreciation of the subject from a life assurance standpoint. In discussing the subject, "Money and the Future Rate of Interest," Mr. A. G. Smith said:—

"In every thing relating to the success of Insurance Offices, a knowledge of these values (value of money and the future rate of interest) is likewise of paramount necessity, for, however accurately your facts as to mortality are stated, however skilfully your formulae are framed, if a mistake is made as to the value of money or rate of interest, error will be the result." (Trans. Act. Soc. Ed., 1-157.)

The chief of the investment department will realize that there are certain classes of securities which are looked upon with special favor by his directors; if these are not available in sufficient amounts to utilize all the surplus funds of the company, it will be his duty to study and investigate the qualities of other kinds of available securities. He should always be able to explain in the minutest detail every feature of an investment which he may recommend, and be prepared to answer without hesitation any question which may be proposed touching it. The faculty of marshalling expeditiously the favorable and unfavorable features in an investment proposition is one which should be cultivated in order that no time may be lost in coming to a conclusion regarding it.

It is questionable if there is any phase of life assurance which calls for more care and more skill than the investing and loaning of the accumulations, in order to secure the maximum returns compatible with absolute safety. The maintenance of a good rate of interest is one of the indications of successful management. Mr. J. J. W. Denchar, F.F.A., F.I.A., stated:—

"It may serve to indicate the great importance of obtaining a good return on the investments, if it is realized that one per cent. of increased interest on the funds of a company will, on the average, have as great an effect as a saving in expenditure equal to 10 per cent. on only one-fifth of 1 per cent. would more than meet all the dividends paid to shareholders by these companies that year.

An increase in the average interest earnings of all Canadian life assurance companies for the year 1901 of the premium income, while, if an office could count on realizing 5 per cent interest in place of 3, it might reduce its premiums some 30 per cent., or double its bonus." (Trans. Ins. Act. Soc. Glas., 1st series-336.)

No matter how desirable a high rate of interest may be, the first consideration in connection with the investment of funds is the absolute security of the capital invested. "Perfect security, as far as human efforts can attain to it, ought to be, and is the first of these conditions—that is, expectation of profits must be subordinated to safety." In determining the character

of investments available, every office must be guided by the powers conferred upon it by Parliament. This restriction, of course, narrows down the number of securities, and it is a debatable point whether in Canada our Parliament should not follow the British practice and give life assurance companies practically unlimited powers to select their securities. The success which the British companies have experienced in the investment of their funds is almost proverbial; one authority states that:—"The history of life insurance business in the United Kingdom affords scarcely a single example of the failure of a company through bad investment."

This is a remarkable statement, and one which it will be interesting to look into by endeavoring to ascertain the reasons that have made the British life assurance companies so successful in this respect. The following, among others, are given:—

"1. That the investment department is under the

personal management of the Board of Directors or of a committee of them. This is advantageous, inasmuch as

Reasons for Success of British Life Offices in Investments.

the judgment of several experienced persons is safer and more reliable than that of any one individual.

2. Usually the Board of Directors is composed of persons engaged in different professions and pursuits—merchants, manufacturers, solicitors, financiers, etc. and consequently, when any transaction is presented, at least some one director will have had experience in dealing with similar transactions.

3. That those in charge of the investment of the funds have been men of great prudence and probity, who, before bringing any transactions before their board, have carefully investigated its merits and are prepared to answer any questions which may be proposed. One writer says, 'Given the same high qualities in the men who are to guide and direct the investments in the future, the outlook so far from giving any cause for anxiety, may be faced with absolute confidence.'

4. The practically unrestricted area from which the British companies have the right to select their securities, has been a most important factor in their success. It has not only assisted to increase their interest earnings, but, as is desirable, has increased the variety of suitable securities.

5. That a high rate of interest has always been made a secondary consideration to the perfect safety of the capital.

6. The investments have been selected with a due regard to the character of the business of life assurance. Assurance companies contract to pay money at periods more or less remote—they are not exposed, as are banks, to sudden and extraordinary demands in time of panic or commercial depression—and their requirements can be predicted with great precision. Therefore, keeping a small portion of their funds in readily-convertible securities, they are able to invest the remainder in securities that are not readily convertible."

The assistant who is placed in a favorable position to engage in the work of the investment department will find the duties interesting, instructive and pleasant, provided he takes a deep interest in everything tending to make his work intelligible, and himself more proficient and experienced.

The first course he should pursue, by reason of his association with the finance arising out of the business of life assurance, is to prepare himself for at least the associate examination of the Institute of Actuaries of Great Britain, the Faculty of Actuaries of Scotland, or the Actuarial Society of America. His preparation for the examinations of one of these bodies will teach him the value of accurate knowledge, give him a good grounding in the theory of finance, make him exact in his statements, and correct in his analysis, while his standing in the profession, if successful in his examinations, is so much enhanced. He should also possess a good knowledge of book-keeping, so as to readily appreciate any financial statement coming under his attention.

The value of actuarial training to a clerk in the investment department, cannot be overestimated. When debentures are being tendered for, tables of values may not be available covering the yield rate for the transaction, or the period of time for which the debentures are to run. This training will enable him to determine the desired value accurately and confidently from first principles. When debentures are bought at a premium or at a discount, special calculations are necessary to determine the amounts which should each year be credited to principal and to interest. The assistant who is acquainted with the theory of interest and annuities-certain will be able to do this work with expedition and ease. Investments will be presented in which it is stipulated that the principal is to be repaid by equal monthly or quarterly instalments, or the interest payable monthly or quarterly. There may not be prepared tables to determine the value of

Value of Actuarial training to a Clerk in the Investment Department.

such investments, and it may, therefore, become essential to construct a formula to obtain the desired information. Annuities-certain, increasing in arithmetical progression, are not infrequently offered to life assurance companies for purchase or as security for a loan. Bonds payable at irregular intervals and in irregular amounts, carrying one rate of interest, and offered at a price to yield another rate, will sometimes be met with. In dealing with these cases mathematical knowledge is indispensable. Mr. Geo. King, F.I.A., at the conclusion of Chap. IV. of his "Theory of Finance," says that circumstances may render it necessary to modify the many formulas which he has set down, and that it may frequently happen that there is no formula given in his work which will directly meet the case in hand; but he goes on to say that the principles enunciated will remain constant and the actuary who has fully mastered the principles will find no difficulty in adapting the formulas to special conditions. While life interests and reversions are not offered to Canadian life assurance companies for purchase or loan by any means as frequently as to companies in Great Britain, the investment department will have presented to it from time to time favorable transactions of this description, and in view of the special features entering into these purchases and loans, an actuary's skill and knowledge become most desirable.

There are many other special investments in the consideration and valuation of which, the one having actuarial knowledge will prove himself superior to one without this special training; and I think it can be safely maintained that the man having actuarial training is all the better qualified to deal with those investments of a life company which do not necessarily require actuarial knowledge, for the reason that the training of the actuary has a tendency to make him accurate in his knowledge, analytical in his investigations, farseeing in his conclusions, and sound in his judgment.

In connection with the investments of Canadian life-companies, it will be interesting to note the amount of invested assets and the manner of distribution among the various classes of available securities. At the close of December, 1901, the total assets of our eighteen offices amounted to \$66,141,980. The amount and proportion of the funds of all the companies invested in each separate class, is given in the following table:—

	Amount.	Per-centage.
Real estate	\$ 5,128,108	7.7
Loans on real estate	19,059,811	28.8
Loans on collateral	3,890,222	5.9
Loans on policies, etc.	6,437,563	9.7
Stocks, bonds and debentures	27,037,804	40.9
Cash	1,080,051	1.6
Agents' balances	56,479	.1
Interest and rents due and accrued.	1,003,250	1.5
Outstanding premiums	2,284,862	3.5
Other assets	163,830	.3
	<hr/>	
	66,141,980	100.0

In an analysis of the assets of the individual Canadian companies some most remarkable differences will be revealed. The question may very well be asked, why has one company deemed it proper to have 25 per cent. of its assets in real estate, while others have a much smaller proportion? Why has one office 74 per cent. of its assets in loans on real estate, while another has but 16 per cent.? And again, why does one company maintain 51 per cent. of its assets in stocks, bonds and debentures, while another has but 6 per cent.?

Upon investigation it may be found that there are very good reasons for these variations, and there is probably no one who is better able to determine what the requirements of a company are as to the proportion of its funds that should be kept in long term investments, short term investments, or

liquid securities than the actuary who has made a most careful investigation of his company's business. Mr. D. Deuchar, F.I.A., F.F.A., has made an interesting reference in this connection:—"The prospective demands on the funds of a life assurance company for death claims, and even for surrenders, can be calculated with considerable accuracy; and in the case of a progressive office, where the average age of the assured is under 50, and where a fair proportion of new business is done, it may be reckoned that for the next twenty, twenty-five or thirty years, or perhaps longer, the income from premiums and interest will cover the amount of claims and expenses, and thus that there will be no impropriety in tying up a considerable proportion of the funds for long periods."

Again, the trained actuarial investment man will be the better able to determine the rates of interest which the office should endeavor to have its funds yield. This, of course, will be, to some extent, dependent upon the prevailing rate of interest and the class of securities invested in. But the valuation rate, or the rate of interest at which the office calculates the reserves under its contracts of assurance and annuity, etc., should be an influencing factor. An office which is maintaining the bulk of its reserves upon a 4½ per cent. basis will endeavor to invest its funds at a rate higher than 4½ per cent., and consequently may take securities in which another office maintaining its reserves upon a 3 per cent. or 3½ per cent. interest rate would not care to invest. It will thus be seen that the basis upon which the actuary calculates his reserves, influences the rate of interest which the investment department will endeavor to have the assets of the company earn. The following table, giving the average rate of interest earned on the assets of Canadian companies for 1901, and the rate of interest at which reserves are maintained will, no doubt, prove interesting:—

Company.	Average Rate of Interest earned in 1901.	Interest Basis of Reserves.	
		*Old Assurance.	*New Assurance.
	Per cent.	Per cent.	Per cent.
1	4.64	3.5	3
2	4.57	4.5 and 3.5	3
3	4.29	4.5	4.5
4	4.77	3.5	3.5
5	5.02	4	4
6	5.36	4.5	4.5
7	4.97	4.5 and 4	3.5 and 3
8	4.43	4	4
9	4.26	3.5	3.5
10	5.39	3.5	3.5
11	5.60	4	4
12	4.78	4.5	4.5
13	4.92	4	4
14	3.39	3.5	3.5
15	4.61	4.5 and 4	3.5
16	4.11	4.5	4.5
17	3.91	4.5	4.5
18	5.12	4.5	3.5

* "Old assurance" refers to policies issued prior to January 1st, 1900, "New assurance" to policies written subsequent to that date.

I will conclude my remarks under this heading by making some suggestions which may assist the young men who are interested in the investment branch of a life assurance company, and who may desire to make themselves valuable to their office:—

(1) The examinations of one of the actuarial bodies previously referred to should be taken.

(2) At least one of the important financial journals of Canada, of Great Britain and of the United States should be regularly and carefully read.

(3) The investment powers of all Canadian life assurance companies should be studied, and the investments authorized by the charter of the company with which he is connected, as well as those authorized by the General Insurance Act as amended, should be thoroughly familiar to the student.

(4) The government reports, which set out in much detail the investments of life assurance companies, should be investigated to ascertain the investments being made by the different companies.

(5) The financial statements of all the institutions in which his company has money invested, should be carefully examined from period to period to determine the desirability of retaining, adding to or selling these securities. The statements of those institutions in whose securities the company has power to invest should be similarly examined, so that when an investment is proposed in any one of them the student will have some idea as to its desirability. This applies especially to the balance sheets of banks, loan companies, trust companies, gas companies, street railway companies, electric light or power companies, telegraph companies, telephone companies, steam railway companies, etc.

(6) The movements on the stock exchange of those stocks in which life companies can invest, should be carefully followed, together with such selected news concerning the money market and the prices of securities as can be generally relied upon.

(7) He should acquaint himself with the terms and conditions under which companies are promoted, and offerings of additional capital in old companies made, under which conversions in securities are proposed, and bonds and debentures tendered.

(8) Ascertain, from year to year, what proportion of the different life assurance companies' funds is invested in the different classes of securities, and endeavor to determine the reasons which influence the companies in investing as they do. Analyze the average rate of interest earned on the funds.

(9) Endeavor to obtain accurate knowledge of land and property values. This will be difficult, and the student will never get through adding to his information along these lines. Study carefully the reports of appraisers—endeavor to cultivate the acquaintance of professional valuers, go out with them when making inspections, and endeavor to ascertain their reasons for placing the values which they do upon the property

under consideration. Conditions in different localities should be studied as opportunity offers.

(10) A knowledge of the elements of the law of contracts and of real and personal property will be helpful.

(11) Opportunities for making satisfactory investments from the standpoint of both security and interest, should always be recognized and attention called to them, and in this connection it is well to remember the six cardinal canons which have been laid down (the first five of them by Mr. A. H. Bailey, F.I.A.) for the investment of life assurance funds:—

- (i.) The primary necessity of securing the safety of the capital.
- (ii.) That the highest practicable rate of interest consistent with such security should be obtained.
- (iii.) That the smaller proportion of the funds be held in readily convertible securities, to provide for current demands.
- (iv.) That the larger proportion may safely be invested in securities not readily convertible.
- (v.) That as far as practicable, the capital should be employed to aid the life assurance business.
- (vi.) That the investments be characterized by variety.

(12) A careful review of every investment of the company at least once a year will prove most instructive and keep the assistant in close actual touch with each security. If a loan be in arrears, prompt action has invariably proved to be the wisest course. A dilatory policy in dealing with borrowers, has frequently prejudiced a company's position, and increased its holdings of foreclosed properties. In connection with properties which have fallen into a company's hands through foreclosures, one institution at least, to my knowledge, has made it a practice to dispose of the holdings at the earliest possible opportunity, even at a loss when compared with the original principal advanced and accumulation of arrears. This policy, which the institution believes has been unquestionably the wisest and best, has been followed by it for many years.

(13) The average rate of interest earned on each class of a life assurance company's investments, should be worked out each year. Some important and far reaching results may accrue from this investigation, and some practical and useful information be obtained.

THE LEGAL DEPARTMENT.

It is quite significant that many of the chief officers of life assurance companies in the United States have either been lawyers, or have had a legal training. Life assurance involves so many interests, has so many different phases, and is so constantly changing that it presents an interesting field for those who have had a professional and business education.

While all our life assurance companies must, of necessity, have their firm of solicitors, I do not know of more than one office (possibly two) **Necessity** equipped with a legal department, with a **for a Legal** professional barrister and solicitor as its **Department.** chief. It is to be wondered that such is the case, in view of the constant service which such a department might render to the company. It may be objected that many of the duties which I may class as properly belonging to the legal department should be left in the hands of the solicitor of the company, but can we not say, with Mr. Thos. Marr, F.I.A.:—"It is all very well to say that solicitors should guide you, but it would never do, and would indeed be impracticable, to refer every question to a solicitor." (Trans. Act. Soc. Ed., I-130.)

Along the line of what Mr. Marr has said, Mr. A. R. Barrand, F.I.A. (205-33 J.I.A.), says:—

"The time has gone by, if indeed it ever existed, when the ordinary legal incidents arising in connection with life assurance business were submitted to the company's solicitors for advice and direction." He goes on to say that "it would be impossible, in practice, to submit every question as to title, in the case of claims and surrenders, to a solicitor, on account of the expense and delay thereby occasioned," and further that it would be impracticable "to saddle the applicant with such legal expenses as might be incurred." (J.I.A., 33-205.)

As in some of the other departments of a life assurance office, the chief and the assistants of the legal department should acquire intimate knowledge of the theory of life assurance, and as already pointed out, this can best be done by following the course of study prescribed by one of the several actuarial bodies which have undertaken, by lectures and examinations, the important work of life assurance education.

Those in Legal Department should have Actuarial Knowledge.

What service could a legal department render?

(1) The application form and policy contract are constantly requiring revision in the light of new conditions and recent legal decisions. New forms of policy contracts are required for new plans of assurance. Here the technical skill of the solicitor, combined with his practical life assurance knowledge, will be utilized. Less than two years ago, application for life assurance was made at the same time and by the same person to two companies. Notes were given for the first premium in each case. The notes were not paid, and death ensued some months after their maturity. There was a provision in each contract, that upon non-payment of a note when due the policy ceased to be in force. In the one company's contract, however, this provision was faulty, and in consequence, the company was compelled to pay the full amount, less the outstanding note. The contract of the other company was drawn up correctly, and although suit was threatened, it was never proceeded with, and the company thus saved \$1,000 from an unjust claim.

(2) In view of the comparatively large amounts involved in connection with claims arising under policies by way of deaths, maturity of endowments, etc., it becomes most essential that a valid and effective discharge be obtained. It will be within the recollection of all that one of our offices was compelled to pay a policy claim twice, through failure to pay it in the first instance to the persons legally entitled to receive it. The office acted on its supposed legal knowledge, instead of con-

sulting its solicitors. Had it had an inside legal department, it is almost certain that it would have been saved this double liability.

(3) Every office receives almost daily, assignments and notices of assignments, of its policies of assurance, and while it is the custom, when acknowledging such, to disclaim any responsibility for the validity or effect thereof, or to make any comment thereon, experience has proved that it is better, in the long run at least, to call attention to any palpable mistake. If this is not done, the purpose intended might be defeated, or serious difficulty rendered to the parties in interest, and possibly at some subsequent period to the company. A life assurance company is dependent upon the public for support, and the more thoroughly it studies the interests of its clients, and the more free it is from legal entanglements, whether as plaintiff or defendant, the more popular will that company become. The treatment of assignments is one which properly belongs to the legal department.

(4) Almost each one of the seven provinces has distinctive assurance laws, a condition which a company has to regard in the conduct of its business in these different provinces. Their statutes are being constantly amended and repealed, and these changes no company can afford to ignore or treat with indifference. It is almost impossible for the chief officer to give due attention to matters of this nature, which a well organized legal department would be in a much better position to handle.

(5) While the title to property owned by, or mortgaged to the company is passed and certified to by the company's regular firm of solicitors, it has been found profitable and desirable to have a competent person check over their work. In fact, there are many features in connection with the company's investments which can be best attended to by a solicitor such as should be at the head of a legal department.

(6) There are often very nice legal points to be determined in connection with the surrender of policies for cash, or for paid-up assurance, and in regard to

loans upon policies. Sometimes cash surrender values and loans are applied for which a company has not power to grant, for the reason that the assured has designated as payee one who is unable to give a sufficient discharge or transfer.

(7) There are always arising important matters relating to the provisions of the policy contract—modifications to meet special cases, permits, special clauses to cover unusual risks, such as the engaging in certain hazardous occupations, or the residing in parts prohibited by the terms of the policy. It is important that these be dealt with in a way to preserve the company's rights. Those trained in law acquire a great proficiency in all matters pertaining to contract rights, and it would appear that the inside solicitor would be invaluable in this connection.

(8) In these days of expansion, several of our native companies have already branched out into other fields. Inasmuch as each country has its own special assurance laws, or ordinances, it is essential for the company, when entering a new field, to become familiar with the terms upon which business may be prosecuted therein, the obligations imposed upon the companies, as well as the rights of the assured and the beneficiary.

(9) The question of taxation on life assurance is becoming a serious and trying one, and will undoubtedly at no distant date demand the united attention of the life assurance companies. Here is a subject which a solicitor, having a technical knowledge of life assurance, should be able to handle intelligently and thoroughly. The life assurance companies in their endeavors to have wrong rectified, and improper proposed legislation subverted, have felt that their hands would have been very materially strengthened if they had been able to obtain a strong legal man, with a thorough knowledge of the theory and practice of life assurance. Such not being available, the chief officers themselves have been compelled to deal with the difficulty.

(10) The investigation of doubtful claims, and the assisting of the company's regular solicitor in the working up of cases in which the company is involved as

plaintiff or defendant, is another illustration of where the person having legal-actuarial knowledge would become invaluable to a company.

(11) The framing of important resolutions or by-laws frequently requires both actuarial and legal life assurance knowledge.

(12) Life offices are constantly called upon to replace policies which have been lost. The issuing of duplicates or copies is one which requires more than the ordinary consideration; and the course to be pursued when the life fails, under such circumstances, calls for great care and caution. Cases have arisen where a policy has been declared lost, a duplicate issued, and at a subsequent period the original has turned up in the hands of an assignee.

(13) If the chief and staff of the legal department have actuarial knowledge, they will be able to deal most effectively with amalgamations, re-insurances and re-organizations. While there have not been many such in Canada, they are bound to come, and the company that is best equipped to treat with them, from a strong business standpoint, will be the company that will have the opportunities to do so.

(14) It would also be the place of the legal department of a life assurance company to be constantly watching life assurance legislation, with the object of endeavoring to influence in every way possible all legislation that will have a beneficial effect upon the business. In this connection, life assurance officials both here and in Great Britain have heretofore rendered material benefit to the assured, to the state, and to life assurance generally.

Sufficient has been said to indicate how intimately associated law is with life assurance, and how essential it is that a life assurance company should have a legal department, with a duly qualified efficient lawyer at its head, well versed in the theory and practice of life assurance. At the same time, let it be distinctly understood that we advocate no interference by such a department with

**Company's
Regular
Solicitors
Indispensable.**

those important and essential legal duties which alone can and should be performed by the company's solicitors. All questions of title to property, opinions as to the validity of issue of bonds, debentures, etc., suits, etc., and many other of the important matters which are constantly arising, should always be passed over to the company's solicitors.

Not only for the purpose of properly safeguarding the affairs of the office, is it desirable that a legal department should be instituted in every life assurance organization, but it is desirable, I believe, simply from

Legal Department Valuable in making Company Popular. the standpoint of the valuable assistance rendered in promoting new business, and in making the company popular an important consideration in these days of keen rivalry and competition. Trivial legal questions

are constantly arising about which the office would ordinarily advise policy holders to consult their solicitors. Take the case of a man holding policies in two different companies and being desirous of effecting a reapportionment of the benefits on both contracts—if one office took up the matter and disposed of it promptly and effectively itself, while the other indicated that it would be essential for the policy holder to consult his lawyer, thus causing him delay and expense, it does not require much consideration to determine the attitude the policy holder would entertain towards the respective companies. It will also be realized that a satisfied policy holder is a constant advertisement for his company, while a dissatisfied one can often nullify the efforts of an agent.

The qualifications of the chief of the legal department of a company have already been referred to, but what about the assistants? It must be

Qualifications of Assistants in Legal Department. realized that it is impossible for a young man to secure a full actuarial training such as is required to obtain the degree of F.I.A., and also to qualify as a solicitor; at the

same time, every assistant should realize the advis-

ability of preparing himself for the highest position in his department. If he does not attain it in his own office he may have the opportunity in another office. It appears to me that each assistant in this department should first aim at qualifying for the associate degree of the Institute of Actuaries, or Faculty of Actuaries, or Actuarial Society of America. After securing this degree he should then take up the study of law, which he could do and still retain his position in the office as an articled clerk to the solicitor who would be the chief of the department. The acquisition of his associate degree, and the completion of his law course, should qualify him, all other conditions being satisfactory, for the very responsible position of chief of the legal department. It may be, however, that some will be content with the actuarial degree, and acquire as best they can the principles of law. This class of assistant may no doubt prove valuable. Mr. J. J. W. Denchar, F.F.A., F.I.A., refers to this feature as follows:—"While much legal information may be acquired within a Life office (particularly if it has a distinct Law department) by a careful and assiduous use of all one's opportunities, no Glasgow student of Life Assurance should rest satisfied with this, but should take advantage of the very excellent Law classes afforded by our University. The convenient, though somewhat early, hour of these classes (8 to 9 a.m.) places them within the reach of all Assurance clerks." (Trans. Ins. & Act. Soc. of Glas., 1st series-324.)

There are other branches of the work of life assurance which might be dealt with, but this paper has extended far beyond what was intended. The agency department—one of the most important in the whole organization—is one which has immense possibilities for young men.

Then there is the advertising and "literature" department, affording abundant scope for originality and good judgment—a department which every Canadian company could afford to maintain with great profit and advantage.

Even the juniors of the office could be organized into a department and thereby rendered more efficient, while such junior department would serve as a preparatory school for the training of assistants for the higher departments. The following quotation concerning the junior, is appropriate:—

“A junior, although employed in the drudgery of office work, can find that post sometimes most interesting.

“His earliest duties will be the filing away and copying of letters. Here he can get a most valuable insight to the business he has chosen—for he should not be content with simply performing the mechanical work, but he should thoroughly grasp the contents. Not only will this be valuable from the standpoint of becoming acquainted with the various styles of composition, but he becomes of immediate assistance to his superior by being able to give the information which the letter contains.

“That company is indeed fortunate whose employees from the highest to the lowest regard its interests as if they were their own, and who are encouraged to do so.”

An objection may be raised by some that the departmentalizing of the work of a moderately sized life assurance company, as suggested, would entail undue expense. To this I would answer, that

Advantage of Departmentalization. experience has demonstrated over and over again that the business that is properly systematized and efficiently conducted in every detail, is the business that has done best for those in interest. It can be affirmed that a life company so organized will make and save in its investment department alone many times the salaries and other expenses attendant upon the conduct of that department.

It may also be objected that many of the duties which have been assigned herein to the heads of the different departments should be dealt with by the chief officer of the company. Although it may be admitted that all the departments should be governed to a certain extent by the chief officer, yet no one department

should be so dependent upon him that it requires extraordinary oversight on his part. Should it not be his aim to organize his office so thoroughly and efficiently that he will be relieved of practically all details, in order that he may be afforded sufficient freedom to superintend the company's entire operations?

In every part of life assurance work, the one important thing for the officers and their assistants to realize is the advantage of technical assurance education; and if I may venture the opinion, I do not think this can be too forcibly impressed upon the staff by the chief officers and the heads of departments, nor can it be taken hold of at too early an age by the juniors.

Technical assurance education is the essential to success in these days of severe competition—our business conditions demand it, the discerning public are quick to appreciate it, and are not slow to notice the lack of it—our business associates take notice of it and give preferment to those who possess it—moreover, the great trust reposed in us is worthy of any sacrifice we may make to secure it. The system of technical education which has been in vogue in the Institute of Actuaries of Great Britain, the Faculty of Actuaries of Scotland, the Actuarial Society of America, etc., has been, without doubt, the great factor in making for sound life assurance.

The life company that lays down the principle that the chief of each one of its various departments shall be a thoroughly trained life assurance man, will have the strongest, best equipped and most intelligent corps of officers. In each department of a life assurance company the officer at its head would be a man infinitely better fitted for dealing with all its workings if he had passed the examinations of one of the actuarial bodies heretofore referred to; and I would, therefore, lay it down as a most desirable feature that all the officers should be actuaries, and further, that it should be the aim of the office to develop young men in its

actuarial department, that they may occupy the important positions in the company.

In one office alone in England there are at least twenty-five Fellows and Associates of the Institute of Actuaries holding responsible positions, and in several of them there are as many as twelve, ten, nine, eight, etc.

The following statement of Mr. John Graham, president of Insurance and Actuarial Society, Glasgow, not only applies to Great Britain, the country to which he refers, but also most forcibly to this continent:—

“How important, then, is technical training and a thorough knowledge of actuarial science here; for in the majority of instances where disaster has overtaken life companies, it has been not so much through fraud, but in consequence of sheer incapacity on the part of those in charge.”

