

CASUALTY ACTUARIAL SOCIETY

ORGANIZED 1914

Recommendations for Study

EDUCATIONAL COMMITTEE

THOMAS O. CARLSON, *Chairman*

FREELAND R. CAMERON

JACK J. SMICK

CLARENCE A. KULP

NELS M. VALERIUS

NORTON E. MASTERSON

EIGHTH EDITION, 1947

The following schedule comprises a complete set of the *Proceedings* issued to date.

Number	Volume	Pages	Number	Volume	Pages
1	I	76	31	XV	136
2	I	130	32	XV	168
3	I	109	33	XVI	232
4	II	186	34	XVI	167
5	II	148	35	XVII	160
6	II	196	36	XVII	191
7	III	128	37	XVIII	252
8	III	200	38	XVIII	279
9	IV	248	39	XIX	214
10	IV	218	40	XIX	202
11	V	196	41	XX	254
12	V	198	42	XX	162
13	VI	168	43	XXI	240
14	VI	268	44	XXI	202
15	VII	216	45	XXII	211
16	VII	263	46	XXII	200
17	VIII	176	47	XXIII	134
18	VIII	185	48	XXIII	196
19	IX	176	49	XXIV	232
20	IX	221	50	XXIV	267
21	X	98	51	XXV	290
22	X	161	52	XXV	192
23	XI	190	53	XXVI	307
24	XI	181	54	XXVI	168
25	XII	204	55	XXVII	235
26	XII	216	56	XXVII	264
27	XIII	146	57	XXVIII	278
28	XIII	218	58	XXVIII	373
29	XIV	220	59	XXIX	208
30	XIV	274	60	XXX	127
			61	XXXI	88
			62	XXXII	190
			63	XXXIII	116

Communications should be addressed to

RICHARD FONDILLER,
Secretary-Treasurer
 CASUALTY ACTUARIAL SOCIETY
 90 JOHN ST., NEW YORK.

RULES REGARDING EXAMINATIONS FOR ADMISSION TO THE CASUALTY ACTUARIAL SOCIETY

1. DATES OF EXAMINATION.

Examinations will be held on the second Tuesday and following Wednesday during the month of May in each year in such cities as will be convenient for three or more candidates.

2. FILING OF APPLICATION.

Application for admission to examination should be made on the Society's blank form, which may be obtained from the Secretary-Treasurer. No applications will be considered unless received before the fifteenth day of February preceding the dates of examination. Applications should definitely state for what parts the candidate will appear.

3. FEES.

The examination fee is \$2.00 for each part, with a minimum of \$5.00 for each year in which the candidate presents himself; thus for one or two parts, \$5.00, for three parts, \$6.00, etc. Examination fees are payable to the order of the Society and must be received by the Secretary-Treasurer before the fifteenth day of February preceding the dates of examination.

4. ASSOCIATESHIP AND FELLOWSHIP EXAMINATIONS.

(a) The examination for Associateship consists of four parts and that for Fellowship consists of four parts. A candidate may take any one or more of the four parts of the Associateship Examination. A candidate may present himself for part of the Fellowship Examination either (a) if he has previously passed the Associateship Examination and all preceding parts of the Fellowship Examination, or (b) if he concurrently presents himself for and submits papers for all unpassed parts of the Associateship Examination and all preceding unpassed parts of the Fellowship Examination. Subject to the foregoing requirements, the candidate will be given credit for any part or parts of either examination which he may pass.

(b) A candidate who has passed the Associateship Examination Parts I-IV prior to 1941, but who has not been enrolled as an Associate because of lack of the experience qualifications required by the examination rules effective prior to 1941, will be enrolled as an Associate upon passing the current Associateship Examination Part IV.

(c) An Associate who has passed no part of the Fellowship Examination under the Syllabus effective prior to 1941 is required, in order to qualify for admission as a fellow, to pass the current Associateship Examination Part IV and Fellowship Examination Parts I-IV.

(d) A candidate who has passed one or more parts of the Associateship or Fellowship Examinations under the Syllabus effective prior to 1948 will receive credit for the corresponding parts of the new Syllabus in accordance with the following table:

<i>Parts Passed Under Old Syllabus (Effective Prior to 1948)</i>		<i>Parts Credited Under New Syllabus (Effective in 1948)</i>	
Associateship, Part I		Associateship, Part I - Section 2	
" " II		" " II	
" " III		" " I - Section 1	
" " IV		" " III	
" " V		" " IV	
Fellowship, Part I		Fellowship, Part I	
" " II		" Parts III & IV - Section 15	
" " III		" Parts II & IV - Section 16	

Partial examinations will be given to those students requiring same in accordance with the foregoing credits.

(e) In the case of a candidate for admission as Associate who has served for a period of at least two years in the armed forces of the United States or Canada or services directly connected therewith, and who shall have completed courses in any of the sections included in Parts I, II, ~~and III~~ of the Associate Examinations at a college or university of recognized standards, the examinations in such sections may be waived at the discretion of the Examination Committee subject to the following conditions and limitations.

1. Such courses shall have been completed within 10 years prior to date of application for such waiver
2. The courses shall have been at least equivalent to those required to qualify the candidate to meet the examination requirements.

3. The grades obtained shall have been satisfactory.

The foregoing waiver of examinations provision shall not apply to candidates applying for admission subsequent to February 15, 1948. Any such waiver made shall lapse if the candidate shall fail to attain Associateship status prior to December 1, 1950.

5. ALTERNATIVE TO PASSING OF FELLOWSHIP PARTS III AND IV.

As an alternative to the passing of Parts III and IV of the Fellowship Examination, a candidate may elect to present an original thesis on an approved subject relating to casualty or social insurance. Such thesis must show evidence of ability for original research and the solution of advanced problems in casualty insurance comparable with that required to pass Parts III and IV of the Fellowship Examination, and shall not consist solely of data of an historical nature. Candidates electing this alternative should communicate with the Secretary-Treasurer and obtain through him approval by the Examination Committee of the subject of the thesis. In communicating with the Secretary-Treasurer, the candidate should state, in addition to the subject of the thesis, the main divisions of the subject and general method of treatment, the approximate number of words and the approximate proportion to be devoted to data of an historical nature. All theses must be in the hands of the Secretary-Treasurer before the second Tuesday in May of the year in which they are to be considered. No examination fee will be required in connection with the presentation of a thesis. All theses submitted are, if accepted, to be the property of the Society and may, with the approval of the Council, be printed in the Proceedings.

6. WAIVER OF EXAMINATIONS FOR ASSOCIATE.

The examinations for Associate will be waived under Article III of the Constitution only in case of those candidates who meet the following qualifications and requirements:

(a) The candidate shall be at least thirty-five years of age.

(b) The candidate shall have had at least ten years' experience in casualty actuarial or statistical work or in a phase of casualty insurance which requires a working knowledge of actuarial or statistical procedure or in the teaching of casualty insurance principles in colleges or universities. Experience limited exclusively to the field of accident and health insurance shall not be admissible.

(c) For the two years preceding date of application, the candidate shall have been in responsible charge of the actuarial or statistical department of a casualty insurance organization or of an important division of such department or shall have occupied an executive position in connection with the phase of casualty work in which he is engaged, or, if engaged in teaching, shall have attained the status of a professor. In the case of a candidate who has spent at least one year in the armed forces of the United States or Canada or services directly connected therewith, the two years requirement stated above shall be reduced to one year.

(d) The candidate shall have submitted a thesis approved by the Examination Committee. Such thesis must show evidence of original research and knowledge of casualty insurance and shall not consist solely of data of an historical nature. Candidates electing this alternative should communicate with the Secretary-Treasurer and obtain through him approval by the Examination Committee of the subject of the thesis. In communicating with the Secretary-Treasurer, the candidate should state, in addition to the subject of the thesis, the main divisions of the subject and general method of treatment, the approximate number of words and the approximate proportion to be devoted to data of an historical nature.

LIBRARY

The Society's library contains all of the references listed in the Recommendations for Study, including the books noted as being out of print, with the exception of certain periodicals and publications subject to periodical revision. It also contains numerous other works on casualty actuarial matters. Registered students may have access to the library by receiving from the society's Secretary-Treasurer the necessary credentials. Books may be withdrawn from the library for a period of two weeks upon payment of a small service fee and necessary postage.

The library is in the immediate charge of Miss Mabel B. Swerig, Librarian of the Insurance Society of New York, 107 William Street, New York City.

SYLLABUS OF EXAMINATIONS
(Effective 1948 and Thereafter)

ASSOCIATESHIP

<i>Part</i>	<i>Sections</i>	<i>Subjects</i>
I	1	Descriptive and Analytical Statistics.
	2	Compound Interest and Annuities Certain.
II	3	Differential and Integral Calculus.
	4	Calculus of Finite Differences.
III	5	Probabilities.
	6	Life Contingencies, Life Annuities and Life Assurances.
IV	7	Policy Forms and Underwriting Practice in Casualty Insurance.
	8	Casualty Insurance Rate Making Methods.

FELLOWSHIP

I	9	Insurance Economics.
	10	Insurance Law and Regulation.
II	11	Individual Risk Rating.
	12	Social Insurance.
III	13	Determination of Premium, Loss and Expense Reserves.
	14	Advanced Problems in Casualty Insurance Statistics.
IV	15	Advanced Problems in Casualty Insurance Accounting.
	16	Advanced Problems in the Underwriting and Administration of Casualty Insurance.

RECOMMENDATIONS FOR STUDY

The examinations for admission to the two grades of membership in the Society are designed to establish the qualifications of candidates. The following Recommendations for Study are provided as a guide for the candidates in their preparation for the examinations. It should be realized that although the examination questions will be based upon the textual material cited, they will not necessarily be drawn directly therefrom. The examinations will test not only the candidate's knowledge of the subject matter but also his ability to apply that knowledge.

Under the mathematical parts (Sections 1-6) of the Associateship Examination, there are listed a few sources of examples in addition to those found in the texts cited. Candidates are advised to work out as many examples as possible in their study of these sections in order to acquire facility in the application of the mathematical principles and methods to specific problems.

In preparing for the Associateship Part IV and the Fellowship Examinations, the candidate should be familiar with pertinent papers published in the Proceedings of the Casualty Actuarial Society subsequent to November, 1945, in addition to the references cited. The candidate should also read at least one insurance journal for the year preceding his examination in order to be familiar with current developments.

The references to papers in the Proceedings of the Casualty Actuarial Society (denoted by P.C.A.S.) and in the Transactions of the Actuarial Society of America (denoted by T.A.S.A.) are considered to include all discussions of these papers in these publications, though the page references cited refer to the papers only.

Description of texts cited will be found in the Index at the end of these Recommendations.

Candidates can review the examinations given in previous years by referring to the reprints contained in both the annual Year Book and the Proceedings of the Society. Copies of examinations for recent years may be obtained from the Secretary-Treasurer.

ASSOCIATESHIP: PART I

The candidate should have adequate preparation in business arithmetic and in algebra as a prerequisite to study for these examinations. The preparation in algebra should include the equivalent of the first 14 chapters of "Higher Algebra" by Hall and Knight (published by Macmillan) with particular emphasis upon permutations and combinations and the binomial theorem.

SECTION 1. DESCRIPTIVE AND ANALYTICAL STATISTICS.

Richardson, C.H.: An Introduction to Statistical Analysis.

SECTION 2. COMPOUND INTEREST AND ANNUITIES CERTAIN.

Rietz, H.L., Crathorne, A.R. and Rietz, J.C.: Mathematics of Finance. Chapters 1-7.

Skinner, E.B.: Mathematical Theory of Investment. (Included as a source of additional examples.)

ASSOCIATESHIP: PART II

SECTION 3. DIFFERENTIAL AND INTEGRAL CALCULUS.

Granville, W.A., Smith, P.F. and Longley, W.R.: Elements of Calculus. Except Chapters 14, 18, 21 and 24.

SECTION 4. CALCULUS OF FINITE DIFFERENCES.

Freeman, Harry: Mathematics for Actuarial Students; Part II - Finite Differences, Probability and Elementary Statistics. Chapters 1-7 and 9.

ASSOCIATESHIP: PART III

SECTION 5. PROBABILITIES.

Hall, H.S. and Knight, S.R.: Higher Algebra. Chapter 32.

Freeman, Harry: Mathematics for Actuarial Students; Part II - Finite Differences, Probability and Elementary Statistics. Chapter 10.

Whitworth, W.A.: Choice and Chance. (Included as a source of additional examples.)

SECTION 6. LIFE CONTINGENCIES, LIFE ANNUITIES AND LIFE ASSURANCES.

Menge, W.O. and Glover, J.W.: An Introduction to the Mathematics of Life Insurance.

Dowling, L. Wayland: Mathematics of Life Insurance. Chapter 9.

- Department of Labor, State of New York: Special Bulletin No. 207, Workmen's Compensation Tables.
- Greene, W.W.: Valuation of the Death Benefits Provided by the New York Compensation Law. P.C.A.S. I, 31.
- Olifiers, Edward: Valuation of the Death Benefits Provided by the Workmen's Compensation Law of New York. T.A.S.A. XVI, 83.
- Fondiller, Richard: Tables for Computing the Present Value of Death Benefits Arising Under the New York Workmen's Compensation Law. P.C.A.S. II, 110.
- Roerber, W.F. and Marshall, R.M.: An American Remarriage Table. P.C.A.S. XIX, 279.
- Greville, Thomas N.E.: United States Bureau of the Census: United States Life Tables and Actuarial Tables, 1939-1941. Parts 1-4.

The candidate should have a working knowledge of the tables set forth in Special Bulletin No. 207, published by the New York Department of Labor. The cited paper by Fondiller will be of particular help in this regard, although his examples are based on an earlier edition of the tables. The cited papers by Greene and Olifiers should be read for an understanding of the theory underlying certain of the tables, but the candidate will not be required to reproduce the derivation of the formulas contained therein.

ASSOCIATESHIP: PART IV

SECTION 7. POLICY FORMS AND UNDERWRITING PRACTICE IN CASUALTY INSURANCE.

SECTION 8. CASUALTY INSURANCE RATE MAKING METHODS.

The first two general references cited below should be considered as introductory to the study of the material included under both of these sections. The earlier chapters in the Hobbs text are also largely prerequisite in substance.

The candidate should be familiar with policy provisions, the bases of exposure used in the respective lines and the manual ratemaking procedures. Since the manual and policy provisions change from time to time it is essential to supplement the cited texts and papers by study of the contracts and manuals currently in use. The principal current manuals, with the names of the

organizations publishing them, are cited herein. Copies of current insurance contracts must be obtained from a carrier.

It should be noted that certain of the references encompass some material beyond the scope of Sections 7 and 8, such as the actuarial principles underlying the respective individual risk rating plans, the determination of deductible and excess coverage rates and the determination of reserves. The examinations for this part will not reflect such extraneous material.

(a) General.

- Kulp, C.A.: Casualty Insurance. Chapters 2-4, 8, 10-15, and 18.
Michelbacher, G.F. and Associates: Casualty Insurance Principles. Chapters 1, 5-7, and 13.
Dorweiler, Paul: Notes on Exposures and Premium Bases. P.C.A.S. XVI, 319.
Perryman, F.S.: Some Notes on Credibility. P.C.A.S. XIX, 65.

Important material on the determination of manual rates is contained in the reports on the examination of the following rate making organizations by the New York Insurance Department, which appear at intervals of three to five years:

Board of Aviation Underwriters
Compensation Insurance Rating Board (New York)
Mutual Casualty Insurance Rating Bureau
National Bureau of Casualty Underwriters
Towner Rating Bureau

In addition, reference should be made to the three latest reports of the National Association of Insurance Commissioners.

(b) Accident and Health.

- Faulkner, E.J.: Accident and Health Insurance.
Craig, J.D.: The Actuarial Basis for Premiums and Reserves in Personal Accident and Health Insurance. P.C.A.S. XVII, 51.
Lamont, S.M.: The Contract of Personal Accident and Health Insurance. P.C.A.S. XVIII, 9.

- Miller, J.H.: History and Present Status of Non-Cancellable Accident and Health Insurance. P.C.A.S. XXI, 235.
- Hart, W.V.B.: Recent Developments in Commercial Accident and Health Insurance. P.C.A.S. XXI, 291.
- Farley, Jarvis: A 1940 View of Non-Cancellable Disability Insurance. P.C.A.S. XXVII, 18.
- Hunter, Arthur and Thompson, Allen B.: Hospital Service Insurance. T.A.S.A. XLIV, 5.

(c) Automobile Liability.

- Sawyer, E.W.: Automobile Liability Insurance, An Analysis of the National Standard Policy Provisions.
- Informal Discussion: Automobile Liability Insurance. P.C.A.S. XXII, 133.
- Manual of Automobile Insurance published by National Bureau of Casualty Underwriters, 60 John Street, New York.

(d) Aviation.

- Comstock, W.P.: Aviation Casualty Insurance. P.C.A.S. XIX, 246.
- Woodward, B.H.: Aviation Insurance. P.C.A.S. XXV, 81.
- Stewart, D.M.: Aviation Insurance. (The Casualty Educator, Vol. III.)

(e) Boiler and Machinery.

- Smith, Seymour E.: Boiler and Machinery Insurance. P.C.A.S. XXIX, 5.
- Manual of Boiler and Machinery Insurance published by National Bureau of Casualty Underwriters, 60 John Street, New York.

(f) Burglary, Theft and Robbery Insurance.

- Manual of Burglary, Theft and Robbery Insurance published by National Bureau of Casualty Underwriters, 60 John Street, New York.

(g) Fidelity and Surety.

- Crist, G.W. Jr.: Corporate Suretyship. Except Chapter 7.
- Lunt, E.C.: Surety Rate Making. P.C.A.S. XXV, 16.

Informal Discussion: Surety Rate Making. P.C.A.S. XXV, 180.
Rate Manual of Fidelity, Forgery and Surety Bonds published by
Towner Rating Bureau, Inc., 60 John Street, New York.

(h) General Liability.

Cahill, J.M.: Product Public Liability Insurance. P.C.A.S. XXI, 26.
Ainley, J.W.: Problems in Relation to Contractual Liability
Insurance. P.C.A.S. XXV, 151.
Sawyer, E.W.: Comprehensive Liability Insurance.
Contractual, Elevator, Manufacturers' and Contractors', Owners',
Landlords' and Tenants', Owners' or Contractors' Protective
and Product Liability Manuals published by National Bureau
of Casualty Underwriters, 60 John Street, New York.

(i) Glass.

Manual of Glass Insurance published by National Bureau of Casu-
alty Underwriters, 60 John Street, New York.

(j) Workmen's Compensation.

The candidate should be familiar with the general
rate making methods used by the National Council on
Compensation Insurance, together with the modifica-
tions adopted in New York.

Hobbs, C.W.: Workmen's Compensation Insurance. Chapters 1-4,
6-10, 12, 13 and 16-18.
Graham, C.M.: The Practice of Workmen's Compensation Rate
Making as Illustrated by the 1939 Revision of New York
Rates. P.C.A.S. XXVI, 47.
Johnson, R.A.Jr.: Recent Developments in New York Compensa-
tion Rate Making. P.C.A.S. XXVII, 144.
The Basic Manual of Rules, Classifications and Rates for
Workmen's Compensation and Employers' Liability Insur-
ance published by National Council on Compensation
Insurance, 45 East 17th Street, New York.

FELLOWSHIP: PART I

SECTION 9. INSURANCE ECONOMICS.

- Willett, A.H.: Economic Theory of Risk and Insurance.
Kulp, C.A.: Casualty Insurance. Chapter I.
Moulton, H.G.: Financial Organization and the Economic System.
Jordan, D.F.: Investments.

SECTION 10. INSURANCE LAW AND REGULATION.

(a) *Introduction to the Law.*

- Stone, H.F.: Law and Its Administration.
Conyngton, T. and Bergh, L.O.: Business Law.

(b) *Principles of the Law of Insurance.*

- Patterson, E.W.: Essentials of Insurance Law. Chapters 2, 3 and 5-12.

(c) *Supervision, Regulation and Taxation of Insurance.*

- Hobbs, C.W.: Workmen's Compensation Insurance. Chapters 5 and 15.
Kulp, C.A.: Casualty Insurance. Chapter 20.
Michelbacher, G.F. and Associates: Casualty Insurance Principles. Chapter 4.
Patterson, E.W.: Essentials of Insurance Law. Chapter I.
New York Insurance Law. Articles I-V, VII, VIII, X and XVII.
New York Tax Law. Section 187.
Hobbs, C.W.: State Regulation of Insurance Rates. P.C.A.S. XXVIII, 37 and 344.
Maycrink, E.C.: Procedure in the Examination of Casualty Companies by Insurance Departments. P.C.A.S. XVIII, 81.
Sawyer, E.W.: Insurance as Interstate Commerce.
Donovan, James B.: Insurance Business as Engaging in Commerce and as Affected by the Federal Anti-Trust Statutes. New York Law Journal Vol. 116, pages 290, 298, 306 and 314. (Included in the Casualty Actuarial Society Library under the title "SEUA Case and Aftermath.")
Rate Regulatory Laws - Casualty and Surety. (Compilation by Association of Casualty and Surety Companies, 60 John Street, New York.)

The candidate should be familiar with the decision of

the United States Supreme Court handed down June 5, 1944 in the case of United States v. South-Eastern Underwriters Assn. et al. (322 U.S. 533, 64 Sup. Ct. 1162), with the McCarran Act passed by Congress and effective March 9, 1945 and with the extension of the McCarran Act effective January 1, 1948. All of the foregoing references except the last three antedate this decision, and should be read with that fact in mind. The candidate should be familiar with developments stemming from the Supreme Court decision and the consequent Congressional action, as reported in insurance periodicals. Familiarity is also required with the Casualty and Surety Rate Regulatory Bill developed by the All Industry Committee which was organized to work in cooperation with the National Association of Insurance Commissioners, and the fundamental points of difference in the legislation passed in the respective states for regulation of rates in the casualty and surety field of insurance. The texts of the Supreme Court Decision, Congressional Acts resulting therefrom, the All Industry Bill together with an explanatory memorandum prepared by the All Industry Committee, the rate regulatory legislation in the respective states, and the material cited above from Mr. Sawyer and Mr. Donovan are all available from the Casualty Actuarial Society library.

The Proceedings of the National Association of Insurance Commissioners from 1944 to date should be reviewed for all discussions and committee reports relating to the Supreme Court decision and subsequent legislative developments.

FELLOWSHIP: PART II

SECTION II. INDIVIDUAL RISK RATING.

The candidate should study the following rating plans effective in the State of New York and the forms used in the application thereof (published by the National Bureau of Casualty Underwriters, 60 John Street, New York.)

Automobile Liability Experience Rating Plan.

Burglary Experience Rating Plan.

Glass Experience Rating Plan.

Public Liability Experience Rating Plan.

The candidate should also study the following rating plans in the workmen's compensation field and the forms used in the application thereof (published by the National Council on Compensation Insurance 45 East 17th Street, New York.)

Workmen's Compensation Experience Rating Plan.

Workmen's Compensation Retrospective Rating Plans - 1943.

The candidate is advised to read the references in the books by Michelbacher and Hobbs cited below to obtain the general principles underlying individual risk rating, prior to studying the respective plans and the technical articles cited from the Proceedings. It should be noted that the general subject of individual risk rating includes the determination of rates for coverages other than full coverage, such as deductible, excess and aggregate stop loss.

Michelbacher, G.F. and Associates: Casualty Insurance Principles. Chapter 8.

Hobbs, C.W.; Workmen's Compensation Insurance. Chapters 17 and 18.

Kulp, C.A.: Casualty Insurance. Chapter 19.

Whitney, A.W.: The Theory of Experience Rating. P.C.A.S. IV, 274.

Keffer, Ralph: An Experience Rating Formula. T.A.S.A. XXX, 130.

Dorweiler, Paul: Observations on Making Rates for Excess Compensation Insurance. P.C.A.S. XIII, 154.

Richardson, H.F.: The Chemical and Dyestuff Rating Plan. P.C.A.S. XVIII, 385.

Dorweiler, Paul: A Survey of Risk Credibility in Experience Rating. P.C.A.S. XXI, 1.

Kormes, Mark: The Experience Rating Plan as Applied to Workmen's Compensation Risks. P.C.A.S. XXI, 81; XXII, 81.

Cahill, J.M.: Deductible and Excess Coverages, Liability and Property Damage Lines Other Than Automobile. P.C.A.S. XXIII, 18.

Perryman, F.S.; Experience Rating Plan Credibilities. P.C.A.S. XXIV, 60.

Pinney, S.D.: The Retrospective Rating Plan for Workmen's Compensation Risks. P.C.A.S. XXIV, 291.

Smick, J.J.: Merit Rating-The Proposed Multi-Split Experience Rating Plan and the Present Experience Rating Plan. P.C.A.S. XXVI, 84.

Cahill, James M.: Excess Coverage (Per Accident Basis) for Self-Insurers: Workmen's Compensation - New York. P.C.A.S. XXVII, 77.

- Peters, Stefan: Ex-Medical Coverage - Workmen's Compensation. P.C.A.S. XXVII, 112.
- Johnson, R.A. Jr.: The Multi-Split Experience Rating Plan in New York. P.C.A.S. XXVIII, 15.
- Dorweiler, Paul: On Graduating Excess Pure Premium Ratios. P.C.A.S. XXVIII, 132.
- Carlson, T.O.: An Actuarial Analysis of Retrospective Rating. P.C.A.S. XXVIII, 283.
- Haugh, C.J.: The Comprehensive Insurance Rating Plan. P.C.A.S. XXVIII, 535.
- Valerius, N.M.: Risk Distributions Underlying Insurance Charges in the Retrospective Rating Plan. P.C.A.S. XXIX, 96.
- Perryman, F.S.: Possible Values for Retrospective Rating Plan. P.C.A.S. XXXI, 5.

Reference should also be made to the reports cited in Sections 8 on the examination of rate making organizations by the New York Insurance Department for such information as is contained therein on individual risk rating plans.

SECTION 12. SOCIAL INSURANCE.

(a) *General.*

- International Labour Office: Approaches to Social Security. Studies and Reports. Series M, No. 18.
- Williamson, W.R.: Social Budgeting. P.C.A.S. XXIV, 17.
- Williamson, W.R.: Some Backgrounds to American Social Security. P.C.A.S. XXX, 5.
- Meriam, L.: Relief and Social Security. Parts II and III.
- Social Security Administration.: Compilation of the Social Security Laws (latest edition).

(b) *Compulsory Automobile Insurance.*

- Committee to Study Compensation for Automobile Accidents: Report to the Columbia University Council for Research in the Social Sciences. Chapter 2.
- Kulp, C.A.: Casualty Insurance. Chapter 9.

(c) *Health Insurance.*

- U.S. Social Security Board: Disability Among Gainfully Occu-

pied Persons. Bureau Memorandum No. 61.
Sinai, N., Anderson, O.W., and Dollar, M.L.: Health Insurance
in the United States.

(d) Old Age Assistance and Insurance.

Grant, Margaret: Old Age Security.
Meriam, L.: Relief and Social Security. Chapters 2, 5 and 6.
House Ways and Means Committee: Issues in Social Security.
Parts I and II.
Féraud, Lucien: Actuarial Technique and Financial Organization
of Social Insurance (Introduction only). International La-
bour Office. Studies and Reports. Series M, No. 17.

(e) Unemployment Insurance.

Department of Labor, State of New York: Economic Brief in Sup-
port of the New York Unemployment Insurance Law.
Meriam, L.: Relief and Social Security. Chapters 8 and 9.
House Ways and Means Committee: Issues in Social Security.
Part III.
Social Security Administration: Comparison of State Unemploy-
ment Compensation Laws (latest edition).
Kulp, C.A.: Calculation of the Cost of Unemployment Benefits
(With Particular Reference to Ohio and Pennsylvania).
P.C.A.S. XIX, 268.

FELLOWSHIP: PART III

**SECTION 13. DETERMINATION OF PREMIUM, LOSS AND EXPENSE
RESERVES.**

Michelbacher, G.F. and Associates: Casualty Insurance Prin-
ciples. Chapter 9.
Black, N.C.: Method of Setting Up Reserve to Cover Incurred
But Not Reported Loss Liability. P.C.A.S. XIV, 9.
Matthews, A.N.: A System of Preparing Reserves on Workmen's
Compensation Claims. P.C.A.S. XIV, 244.
Craig, J.D.: The Actuarial Basis for Premiums and Reserves
in Personal Accident and Health Insurance. P.C.A.S.
XVII, 51.
Report of the Committee on Compensation and Liability Loss
Reserves. P.C.A.S. XVII, 137, 333.
Roeber, W.F. and Marshall, R.M.: An American Remarriage
Table. P.C.A.S. XIX, 279.
Valerius, N.M.: On Indeterminate Reserve Tables for Compen-

sation. P.C.A.S. XX, 82.

Tarbell, T.F.: Incurred But Not Reported Claim Reserves. P.C.A.S. XX, 275.

Informal Discussion: Reserves Against the Recurrence of an Unfavorable Loss Ratio in the Bonding Lines. P.C.A.S. XXIII, 269.

Informal Discussion: Premiums and Loss Reserves for Casualty and Bonding Insurance. P.C.A.S. XXV, 366.

Department of Labor, State of New York: Special Bulletin No. 207, Workmen's Compensation Tables.

Conrod, S.F.: Valuation of Non-Cancellable Accident and Health Insurance Policies. P.C.A.S. XXXII, 27.

The candidate should have knowledge of the provisions of Section 326 of the New York Insurance Law (as recodified in 1939): loss and loss expense reserves of casualty insurance and surety companies. The convention form of annual statement blank for casualty companies sets forth in Schedule "P" the statutory loss reserve requirements for the liability and compensation lines. This schedule should be studied carefully.

SECTION 14. ADVANCED PROBLEMS IN CASUALTY INSURANCE STATISTICS.

This section includes reading which covers: (a) the planning and use of internal statistical material, and the compilation and presentation of casualty insurance statistics for administrative and rate making purposes; (b) sources and uses of external statistics particularly as they may be required in casualty insurance administration and rate making, and (c) advanced problems in statistical analysis.

(a) Internal Statistics.

In addition to the references cited, the candidate should study the various statistical plans used in casualty insurance. The plans most widely used, and the organizations publishing them, are listed below:

Personal Accident and Health Statistical Plan: Bureau of Personal Accident and Health Underwriters, 60 John Street, New York.

The Unit Statistical Plan and Schedule "Z" for Workmen's Compensation; National Council on Compensation Insurance, 45 East 17th Street, New York.

Standard Fidelity, Surety and Forgery Classification Code:

Towner Rating Bureau, Inc., 60 John Street, New York.

Statistical plans for Automobile Bodily Injury and Automobile Property Damage Liability, Boiler and Machinery, Burglary, Glass, and the respective General Liability lines; National Bureau of Casualty Underwriters, 60 John Street, New York.

Automobile Statistical Plan for Fire, Theft, Comprehensive, Collision and Allied coverages: National Automobile Underwriters Association, 90 John Street, New York.

Automobile Statistical Plans (all coverages): National Association of Independent Insurers, 111 West Washington Street, Chicago, Illinois.

Statistical Plans - Casualty Lines other than Automobile: National Association of Independent Insurers, 111 West Washington Street, Chicago, Illinois.

Michelbacher, G.F. and Associates: Casualty Insurance Principles. Chapters 10 and 11.

Crist, C.W. Jr.: Corporate Suretyship. Chapter 7.

Hobbs, C.W.: Workmen's Compensation Insurance. Chapter 16.

Linder, Joseph: The Function and Place of the Statistical Department in a Multiple Line Casualty Company. P.C.A.S. XIV, 27.

Masterson, N.E.: Statistical Methods for Casualty Companies by Use of the Eighty Column Hollerith System. P.C.A.S. XVI, 288.

Graham, C.M.: The New York Unit Statistical Plan; A Method of Preparing and Reporting Data and Analyzing the Carrier's Business. P.C.A.S. XVII, 190.

Kormes, Mark: A Method of Assembling and Analyzing the Data Reported under the Unit Statistical Plan. P.C.A.S. XVIII, 99.

The candidate should be familiar with the sources of published insurance statistics, so as to know where to obtain such information when the need arises. The following annual publications constitute a representative list of such sources:

Alfred M. Best Co., (New York): Best's Insurance Reports (Casualty and Surety); Best's Reproductions of Principal Schedules from Casualty and Surety Statements; Best's Fire and Casualty Aggregates and Averages.

The National Underwriter (New York): Argus Casualty and Surety Chart.

The Spectator (Philadelphia): The Spectator Insurance Year Book: I. Casualty and Surety Volume; II. Casualty Insurance by States.

The Weekly Underwriter (New York): The Insurance Almanac.

(b) External Statistics.

The candidate should endeavor to become acquainted

with as many sources of external statistics as possible so as to know where to obtain the necessary information in connection with the solution of problems arising in the casualty insurance business. The following is a representative but limited list of such sources:

- Board of Governors of the Federal Reserve System: Federal Reserve Bulletin (monthly).
- Division of Statistical Standards, United States Bureau of the Budget: Statistical Services of the United States Government.
- Schmeckebier, L.F.: Statistical Work of the National Government.
- United States Department of Commerce: Survey of Current Business (monthly).
- United States Department of Commerce, Bureau of the Census: Statistical Abstract of the United States (annually).
- United States Department of Labor, Bureau of Labor Statistics: Monthly Labor Review.
- United States Department of Labor, Bureau of Labor Statistics: Methods of Procuring and Computing Statistics. Bulletin 326.
- United States Department of Commerce, Bureau of Foreign and Domestic Commerce: Distribution Cost Accounting for Wholesaling (Domestic Commerce Series, No. 106).

(c) *Advanced Statistical Analysis.*

The candidate should be familiar with mathematical statistics and statistical analysis, with special attention to applications in casualty insurance. The first two references cited below are supplementary to the Richardson text cited under Section I, and will provide the candidate with the mathematical background necessary for a reading of the subsequent references which relate particularly to casualty insurance.

- Hoel, Paul G.: Introduction to Mathematical Statistics.
- Wolfenden, Hugh H.: The Fundamental Principles of Mathematical Statistics. Chapters I through VI, VIII, IX, XI, VII excluding pp. 75-77 inclusive. Section B, Mathematics and Interpretations, Paragraphs 22-25. Section C, Applications, Paragraphs 7, 17-18, 20-25.
- Peters, Stefan: A Method of Testing Classification Relativities. P.C.A.S. XXVIII, 105.
- Bailey, Arthur L.: Sampling Theory in Casualty Insurance. P.C.A.S. XXIX, 50 and P.C.A.S. XXX, 31.

- Satterthwaite, F.E.: Notes on Mathematical Statistics. P.C.A.S. XXIX, 122.
- Bailey, Arthur L.: A Generalized Theory of Credibility. P.C.A.S. XXXII, 13.
- Carleton, John: Non-Random Accident Distributions and the Poisson Series. P.C.A.S. XXXII, 21.

FELLOWSHIP: PART IV

SECTION 15. ADVANCED PROBLEMS IN CASUALTY INSURANCE ACCOUNTING.

The candidate should acquire an adequate knowledge of the following:

1. General Accounting. As a prerequisite to a study of insurance accounting in detail, the candidate should be familiar with the fundamental accounting principles, terms and forms as set forth in standard college texts on the subject. "Principles of Accounting" by R.B.Kester is suggested for reading.
2. The purposes, details and sources of the accounts set forth in the current convention form of annual statement blank (with accompanying schedules) for casualty companies.
3. The Casualty Insurance Expense Exhibit and the instructions for its preparation.
4. The adaptation of tabulating machine equipment to purposes of insurance accounting.

Hull, R.S.: Casualty Insurance Accounting. (The particular forms and schedules set forth in this book are in many instances superseded, but the text is important for a discussion of insurance accounting principles.)

Michelbacher, G.F. and Associates: Casualty Insurance Principles. Chapters 20 and 22.

Hobbs, C.W.: Workmen's Compensation Insurance. Chapter 14.

Tarbell, T.F.: Determination of Acquisition and Field Supervision Cost by Line of Business for Casualty Insurance. P.C.A.S. X, 107.

Tarbell, T.F.: Accounting Methods for Casualty Companies by Use of the Hollerith System. P.C.A.S. XII, 215.

Bailey, W.B.: The Allocation of Adjusting Expense to Line of Insurance. P.C.A.S. XIV, 233.

Van Tuyl, H.O.: The Analysis of Expenses by the Use of Hollerith Cards. P.C.A.S. XVI, 121.

Perryman, F.S.: The Theory of the Distribution of the Expenses of Casualty Insurance. P.C.A.S. XVII, 22.

Magrath, J.J.: Valuation of Investments. P.C.A.S. XX, 281.

Barber, H.T.: Compensation Expenses Per Policy. P.C.A.S. XXI, 65.

- Waite, H.V.: Distribution of Inspection Cost by Line of Insurance. P.C.A.S. XXII, 15.
- Tarbell, T.F. and Waite, H.V.: The Distribution of Casualty Administration Expense by Line of Insurance. P.C.A.S. XXIV, 45.
- Tarbell, T.F.: Casualty Insurance Accounting and the Annual Statement Blank. P.C.A.S. XXVII, 294.
- Tarbell, T.F.: Exhibits and Schedules of the Casualty Annual Statement Blank. P.C.A.S. XXVIII, 60.
- Pruitt, D.M.: Premium Collections on Punch Cards. P.C.A.S. XXVIII, 503.

SECTION 16. ADVANCED PROBLEMS IN THE UNDERWRITING AND ADMINISTRATION OF CASUALTY INSURANCE.

It is strongly recommended that the candidate seek to acquire technical proficiency in the subjects covered under this section by direct discussion, whenever possible, with executives in the various departments of the casualty insurance business. In addition, the candidate should review scientific and professional journals and the proceedings of supervisory and administrative bodies or associations. Illustrative of these materials are the following:

- International Association of Industrial Accident Boards and Commissions: Proceedings (annual). Published currently by the United States Department of Labor, Division of Labor Standards.
- National Association of Insurance Commissioners: Proceedings.
- State of New York, Superintendent of Insurance: Casualty, Surety and Miscellaneous Report. Part III (annual).
- State of New York, Superintendent of Insurance: Preliminary Report (annual). (Materials on Casualty and Social Insurance).

The candidate should keep in touch with current developments in casualty and related insurance lines by reading regularly the New York Journal of Commerce and also at least two general insurance periodicals. Best's Insurance News (Fire and Casualty Edition) for the most recent years should be reviewed for articles relating to insurance company investments.

The candidate should review all papers in the *Proceedings* of the Society for recent years which are not cited under the preceding sections. The papers included in

the following references are indicated for particular attention:

- Michelbacher, G.F. and Associates: Casualty Insurance Principles. Chapters 2, 3, 12, 14-19 and 21.
- Hobbs, C.W.: Workmen's Compensation Insurance. Chapter 11.
- Flynn, B.D.: Interest Earnings as a Factor in Casualty Insurance Rate Making. P.C.A.S. XIV, 285.
- Tarbell, T.F.: Business Cycles and Casualty Insurance. P.C.A.S. XVIII, 253.
- Tarbell, T.F.: The Effect of Changes in Values on Casualty Insurance. P.C.A.S. XIX, 1.
- Dorweiler, Paul: Policy Limits in Casualty Insurance. P.C.A.S. XX, 1.
- Cahill, J.M.: Product Public Liability Insurance. P.C.A.S. XXI, 26.
- Report of the Committee on Bases of Exposure for Workmen's Compensation Insurance. P.C.A.S. XXI, 200.
- Hobbs, C.W.: Federal Jurisdiction and the Compensation Acts. P.C.A.S. XXIII, 170.
- Ainley, J.W.: Problems in Relation to Contractual Liability Insurance. P.C.A.S. XXV, 151.
- Vanderfeen, C.G.: Voluntary Plans for Granting Automobile Bodily Injury and Property Damage Liability Insurance to Risks Unable to Secure it for Themselves. P.C.A.S. XXVIII, 471.
- Farley, Jarvis and Billings, Roger: An Approach to a Philosophy of Social Insurance. P.C.A.S. XXIX, 29.
- Blanchard, Ralph H. Survey of Accident and Health Insurance. U.S. Social Security Board. Bureau Memorandum No. 62.
- Blackall, J.C.: Stocks and Bonds as Insurance Company Investments. Proceedings, National Association of Insurance Commissioners, 1936, 91.
- Informal Discussion: Investments of Casualty Insurance Companies. P.C.A.S. XXIV, 141.

INDEX TO READINGS

(Books Marked "out of print" are in the Society library)

AUTHOR	TITLE	PUBLISHER
Best's Insurance News	<i>Fire and Casualty Edition</i> (monthly)	Alfred M. Best Co., New York
Blanchard, Ralph H.	<i>Survey of Accident and Health Insurance (Bureau Memorandum No. 62)</i>	Social Security Administration, Washington, D.C.
Committee to Study Compensation for Automobile Acci- dents.	<i>Report to the Columbia U- niversity Council for Re- search in the Social Sci- ences (1932) (out of print)</i>	Press of Interna- tional Printing Company, Phila- delphia.
Conyngton, T. and Bergh, L.O.	<i>Business Law (third edition 1935; revised printing 1941)</i>	The Ronald Press Company, New York
Crist, G.W., Jr.	<i>Corporate Suretyship (1939) (out of print)</i>	McGraw-Hill Book Co., Inc., New York
Division of Statisti- cal Standards, United States Bu- reau of the Budget	<i>Statistical Services of the United States Government (1947)</i>	Division of Statisti- cal Standards, Bureau of the Bud- get, Washington, D.C.
Department of Labor, State of New York	<i>Economic Brief in Support of the New York Unemployment Insurance Law (1937)</i>	Division of Placement and Unemployment In- surance, Albany, N.Y.
Dowling, L. Wayland	<i>Mathematics of Life Insur- ance (1925)</i>	McGraw-Hill Book Co., Inc., New York
Faulkner, E.J.	<i>Accident and Health Insur- ance (1940)</i>	McGraw-Hill Book Co., Inc., New York
Féraud, Lucien	<i>Actuarial Technique and Fi- nancial Organization of Social Insurance, Interna- tional Labour Office, Se- ries M, No. 17</i>	International Labour Office, Washington, D.C.
Freeman, Harry	<i>Mathematics for Actuarial Students; Part II-Finite Differences, Probability and Elementary Statis- tics (1939)</i>	Cambridge University Press
Grant, Margaret	<i>Old Age Security (1939)</i>	Social Science Re- search Council, Com- mittee on Social Se- curity, Washington, D.C.
Granville, W.H., Smith, P.F. and Longley, W.R.	<i>Elements of Calculus (1946)</i>	Ginn and Co., Boston
Hall, H.S. and Knight, S.R.	<i>Higher Algebra (fourth ed- ition 1891)</i>	The Macmillan Co., New York
Greville, Thomas N.E.	<i>United States Bureau of the Census: United States Life Tables and Actuarial Ta- bles, 1939-41</i>	Government Printing Of- fice, Washington, D.C.

INDEX TO READINGS - *Continued*

AUTHOR	TITLE	PUBLISHER
Hobbs, C.W.	<i>Workmen's Compensation Insurance Insurance (1939)</i>	McGraw-Hill Book Co., Inc., New York
Hoel, Paul G.	<i>Introduction to Mathematical Statistics</i>	John Wiley & Sons, Inc., New York
House Ways and Means Committee	<i>Issues in Social Security (1946)</i>	Government Printing Office, Washington, D.C.
Hull, R.S.	<i>Casualty Insurance Accounting (1930) (out of print)</i>	The Ronald Press Co., New York
International Labour Office	<i>Approach to Social Security Studies and Reports, Series M, No. 18</i>	International Labour Office, Washington, D.C.
Jordan, D.F.	<i>Investments (fourth revised edition 1941)</i>	Prentice Hall, Inc., New York
Kester, R.B.	<i>Principles of Accounting (1939)</i>	The Ronald Press Co., New York
Kulp, C.A.	<i>Casualty Insurance (second revised edition 1942)</i>	The Ronald Press Co., New York
Menge, W.O. and Glover, J.W.	<i>An Introduction to the Mathematics of Life Insurance (1935)</i>	The Macmillan Co., New York
Meriam, L.	<i>Relief and Social Security (1946)</i>	The Brookings Institution, Washington, D.C.
Michelbacher, G.F. and Associates	<i>Casualty Insurance Principles (second edition 1942)</i>	McGraw-Hill Book Co., Inc., New York
Moulton, H.G.	<i>Financial Organization and the Economic System (1938)</i>	McGraw-Hill Book Co., Inc., New York
National Association of Insurance Commissioners	<i>Proceedings</i>	Obtainable from Secretary of Association
New York Insurance Law	<i>1939, with subsequent amendments</i>	Banks-Baldwin Publishing Co., Cleveland, Ohio
New York Insurance Law	<i>1939, with subsequent amendments</i>	Edited by Paul R. Taylor. Williams Press, Inc., Albany
New York Tax Law	<i>McKinney's Consolidated Laws of New York, Annotated-Book 59, (1943)</i>	Edward Thompson Co., Brooklyn, N.Y. (Section 187 in Baldwin's Insurance Law cited above)
Patterson, E.W.	<i>Essentials of Insurance Law (1935)</i>	McGraw-Hill Book Co., Inc., New York
Richardson, C.H.	<i>An Introduction to Statistical Analysis (revised edition 1944)</i>	Harcourt, Brace & Co., New York
Rietz, H.L., Crathorne, A.R. and Rietz, J.C.	<i>Mathematics of Finance (revised edition 1932) (out of print)</i>	Henry Holt & Co., New York

INDEX TO READINGS - *Continued*

AUTHOR	TITLE	PUBLISHER
Sawyer, E.W.	<i>Automobile Liability Insurance (1936)</i>	McGraw-Hill Book Co., Inc., New York
Sawyer, E.W.	<i>Comprehensive Liability Insurance (1943)</i>	The Underwriter Printing and Publishing Co., New York
Sawyer, E.W.	<i>Insurance as Interstate Commerce (1945)</i>	McGraw-Hill Book Co., Inc., New York
Schmeckebier, L.F.	<i>Statistical Work of the National Government (1925)</i>	The Brookings Institution, Washington, D.C.
Sinai, N., Anderson, O.W., and Dollar, M.L.	<i>Health Insurance in the United States</i>	The Commonwealth Fund, New York
Skinner, E.B.	<i>Mathematical Theory of Investment</i>	Ginn & Co., Boston
Social Security Administration	<i>Comparison of State Unemployment Compensation Laws (latest edition)</i>	Social Security Administration, Washington, D.C.
Social Security Administration	<i>Compilation of the Social Security Laws (latest edition)</i>	Social Security Administration, Washington, D.C.
Stewart, D.M.	<i>Aviation Insurance (The Casualty Educator, Vol III) (1946)</i>	The Underwriter Printing and Publishing Co., New York
Stone, H.F.	<i>Law and Its Administration (1924)</i>	Columbia University Press, New York
U.S. Social Security Board	<i>Disability Among Gainfully Occupied Persons (Bureau Memorandum No. 61)</i>	U.S. Social Security Board, Washington, D.C.
U.S. Social Security Board	<i>Social Security in America (1937)</i>	U.S. Social Security Board, Washington, D.C.
Whitworth, W.A.	<i>Choice and Chance</i>	G.E. Stechert & Co., New York
Willet, A.H.	<i>Economic Theory of Risk and Insurance (1901) (out of print)</i>	Columbia University Press, New York
Wolfenden, Hugh H.	<i>The Fundamental Principles of Mathematical Statistics (1942)</i>	The MacMillan Company of Canada, Limited, Toronto, for the Actuarial Society of America, New York

