

**TRANSACTIONS OF SOCIETY OF ACTUARIES
1949 VOL. 1 NO. 1**

BOOK REVIEWS AND NOTICES

Length of Life. By Louis I. Dublin, Ph.D., Second Vice President and Statistician; Alfred J. Lotka, D.Sc., Assistant Statistician, Retired; and Mortimer Spiegelman, F.S.A., Assistant Statistician, Metropolitan Life Insurance Company. The Ronald Press Company, New York, 1949. Pp. 404.

The first edition of *Length of Life* by Drs. Dublin and Lotka of the Statistical Department of the Metropolitan Life Insurance Company was published in 1936 and reviewed at considerable length in *TASA XXXVII*. In this new edition a third author, Mr. Mortimer Spiegelman, also of the Metropolitan Life Insurance Company, has collaborated with the original authors.

The marked increase in the average duration of life in the intervening years makes publication of a revised edition timely. For white males in the United States the average length of life, approximately 48 years in 1900-02 and 59 years in 1929-31, has risen to 65.12 years in 1946. For white females in the United States corresponding figures are 51.08, 62.67 and 70.28, respectively. Compared with the native-born white population, the foreign-born in the United States were at a distinct disadvantage in 1900-02, but by 1940 the difference in longevity had practically disappeared. The colored population still lags behind the white population, but the improvement in the 20th century in the longevity of colored persons has been even greater than that for white persons.

As in the original edition, the probable future trends have been studied and a hypothetical table produced for 1975. Assuming that gains in medical and sanitary science are applied with the least possible delay and assuming further progress in other spheres affecting our standard of living, such as better food and dietary habits, improved housing conditions, the maintenance of a working environment in which occupational hazards are amply guarded against, the extension of recreational facilities, etc., forecasts are made as to the probable expectation of life in the United States in 1975 and studies in that direction by Mr. P. K. Whelpton of the United States Census Bureau are discussed. The authors conclude that it is reasonable to expect a possible gain in the average length of life for the population as a whole in the United States from 66.7 in 1946 to 71.4 in 1975.

In this edition the subject of Generation Life Tables is introduced as contrasted with the usual Life Tables. A particular hypothetical generation of 100,000 assumed to have been born in Massachusetts in 1890 is followed and interesting tables are given showing the difference in the number of deaths at specific ages, first on the basis of the rates of mortality prevailing in the year of birth and second using the rates actually experienced in the intervening years. It is shown that by the time the generation had reached age 50 in 1940 there were 9,305 more survivors because of the reduction in mortality ratios than would have been the case had the 1890 mortality rates continued.

Reference is made to Selective Service results during the second World War. Contrary to the somewhat alarming conclusions which have appeared in various publications from time to time due to the rather high rejection rate for military service, the authors point out that the vast majority of persons who could not meet military standards are nevertheless able to carry on adequately in civilian life. "Obviously, Selective Service statistics cannot be taken as an indication of serious defects in the national health."

An interesting discussion is given of the effects of the increase in the average length of life on population problems and the economy of the country. As against 4.1% of the population over age 65 in 1900 and 6.8% in 1940, it has been estimated by the United States Census Bureau that there will be 13.2% of the population over age 65 in the year 2000. The needs of this rising proportion of the aged may be more than can be met in the productive years prior to 65 and thus may lead to a labor market for persons over age 65. That such elderly persons are still capable of gainful production was amply demonstrated in World War II. The authors suggest there may be a tendency to raise the normal age of retirement.

Whereas deaths at age 45 and over accounted for only 40% of the total deaths in the United States in 1900, deaths over that age are 75% of the total in 1946 and this proportion should rise to about 80% by 1960 and to 90% by the end of the century.

The first edition predicted a growth of the population of the United States to a maximum of about 154,000,000 by 1990. That prediction was based on the steady decline in the birth rate which had been in evidence plus reasonable assumptions relative to continuing improvement in mortality rates. Unusually high birth rates just prior to and just after World War II (as high as 28 per 1,000 as against 17 per 1,000 prewar) have necessitated revising that estimate to a considerably higher figure. However, it is the authors' opinion that this sudden increase in the birth rate was undoubtedly a purely transitory phenomenon.

The general outline of the book remains the same but much new material has been added and the many tables have been brought up to date. As the authors say in their preface, "The book, though technical in many of its aspects, also has a popular appeal."

THOMAS K. DODD

OTHER RECENT PUBLICATIONS

MATHEMATICAL, STATISTICAL, AND ACTUARIAL TABLES, TEXTBOOKS, ETC.

Neyman, Jerzy, Editor. *Proceedings of the Berkeley Symposium on Mathematical Statistics and Probability*. University of California Press, Berkeley, California, 1949. Pp. 510.

Thirty papers on mathematical statistics and probability presented by scholars and mathematicians at a conference held in Berkeley, covering the applications of mathematical statistics and probability to philosophy, astronomy, economics, agriculture, biology, forestry, psychology, and entomology.

Reichenback, Hans. *The Theory of Probability*. 1949. Pp. 508.

This is the first English-language edition of *Wahrscheinlichkeitslehre*, an inquiry into the logical foundations of probability, which combines mathematical, philosophical, and logical methods. The German version was published in Leiden, Holland, in 1935. The present edition has been rewritten and includes new material. Presented in the form of an axiomatic system, this work sets forth the theory of probability for the student and analyzes the logical structure of probability relations. It also considers the application of these relations to physical reality, develops a probability logic, and investigates the problem of induction.

OTHER ACTUARIAL AND INSURANCE PUBLICATIONS

Canadian Association of Actuaries. *Actuarial Tables*, Commissioners 1941 Standard Ordinary and CM⁽⁶⁾ Mortality Tables. Canadian Association of Actuaries, 1947.

These tables are published in three volumes and were prepared to take cognizance of the general adoption of the Commissioners Standard Ordinary Mortality Table and the continued decline of interest rates. The CSO volumes contain tables of mean and terminal reserves calculated on the Canadian modified preliminary term basis of valuation at 2½% and 3% interest while the CM⁽⁶⁾ volume contains similar values based on 2½% interest.

Values are shown for most of the standard plans of insurance except that premiums and reserves are not shown on the ordinary life and term plans in the CSO volumes since they are the same as by the Commissioners Reserve valuation method and have already been published by the Actuarial Society of America and the American Institute of Actuaries. The CM⁽⁶⁾ volume also includes pages showing the single premiums for term insurances, endowments, pure endowments and annuities-due, as well as commutation columns and the accumulation factors u_x and k_x .

Cowee, John W. *Federal Regulation of Insurance*. University of Wisconsin, School of Commerce, Bureau of Business Research and Service, Madison, Wis., 1948. Pp. 89.

This is the second printing of a treatise on the history and development of state regulation of insurance, the consequences of the 1944 South-Eastern Underwriters Association decision and the problems presented to Congress by this decision. There is a discussion of the development of Public Law 15 and the model legislation prepared by the All-Industry Committee for the states to adapt to their own particular problems. The booklet closes with a discussion of the future of State and Federal regulation. An extensive bibliography is appended which adds to the value of the booklet.

Crobaugh, Clyde J. *Handbook of Insurance*. Prentice-Hall, Inc., New York, 1949. Pp. 393.

This is the second edition, the first being published in 1931. The book is made up of definitions and explanations of insurance items. It is divided into two sections. Section 1 deals with life insurance and annuities and Section 2 deals with accident and health insurance. It should be valuable as a reference book for insurance students.

Dominion Bureau of Statistics. *Life Tables for Canada, 1947*. Health and Welfare Division of the Dominion Bureau of Statistics, Ottawa, 1949. Pp. 21.

The tables presented in this report (Vital Statistics Analytical Report No. 6) continue the series published by the Dominion Bureau of Statistics as listed in T.A.S.A.

XLIX, 217 and L, 107; and in R.A.I.A. XXXVII, 105 and XXXVIII, 150. They give elementary values from ages zero to the end of the tables for males and females separately, and are based on the estimated population of Canada by sex and age for 1947 and the deaths by sex and age recorded as having occurred during that year.

A new feature of this report is the inclusion of supplementary life tables showing elementary values for each of the first seven days of life, for the second to fourth weeks of life, and for the second to twelfth months of life. These data are given for both males and females and separate tables have been prepared to reflect the experience during the year 1947, and the years 1930-32 and 1940-42.

Institute of Life Insurance (Prepared and Published by). *1949 Life Insurance Fact Book*. New York, 1949. Pp. 96.

This is the fourth year of publication of this publication of the Institute. It is similar in scope to the previous Fact Books. Most of the data are complete through 1948 though some of the 1948 totals are preliminary.

Lane, Mervin L. *Successful Practice of Insurance*. Prentice-Hall, Inc., New York, 1949. Pp. 327.

An experienced underwriter gives his views on how to become an underwriter. Starting with office accommodations he discusses such subjects as building your clientele, developing business through conscientious service, handling appointments and interviews, financial problems, advertising, combining general brokerage and life insurance. This book should be valuable in helping young men to choose a career.

Murray, F. T. *The Theory of Mathematical Machines*. King's Crown Press, New York, 1948. Pp. 148.

This is a revised edition of a treatise on computing instruments. New chapters have been added on "Electronic Digital Computers" and "Noise, Accuracy and Stability."

White, Edwin H. *Business Insurance*. Prentice-Hall, Inc., New York, 1949. Pp. 445.

This is a very comprehensive book on business insurance written by an insurance man who is also an attorney-at-law. The book is divided into three parts. Book I deals with Proprietorships, Book II deals with Partnerships and Book III deals with Corporations. Each book is divided into several chapters where the structure of the various types of business organizations is described. The effect on the structure of the death of one of the principals, the results of voluntary termination and the tax problems involved are also discussed. Also included are solutions to the problems through the use of business life insurance.

PENSION FUNDS AND SOCIAL INSURANCE

Burns, Evaline M. *The American Social Security System*. Houghton Mifflin Company, Boston. Pp. 498.

Dr. Burns is one of a goodly company, small and rather select, that has stayed interested in the subject of Social Security over the years. In addition to her classroom work, her addresses, her short articles and her work with the Federal Government, she now has three books on this theme to her credit. The first, "Toward Social Security," appeared in 1936, before the Social Security Board had got fully into its stride. The next does not bear her name as author, but it is recognized as her report, the gargantuan 1942 "Report on Security, Work and Relief Policies," the official story of the National Resources Planning Board (sometimes called the American Beveridge Report—and

appearing at about the same time as the Beveridge Report in England and the Marsh Report in Canada—the three authors all having had instruction or teaching connection in and with the London School of Economics). The current volume starts from the background of her other two books. It moreover shows a serious effort to keep abreast of the large number of state laws on unemployment compensation and public assistance, as well as the constantly shifting patterns of Federal laws and direction.

The tolerant American actuary seems to have pretty well accepted the inevitability of these programs, but only recently has the uniqueness of the United States, with its enviable record on Ordinary, Industrial and Group Life Insurance, and the recent most striking growth in Accident and Health Insurance, begun to seem a matter of importance to him. So it is not surprising that Dr. Burns pays "little mind" to the American voluntary system, and its possible significance in lowering the floors of protection determined under Federal direction.

In her preface she says: "My major object . . . is to depict the main characteristics of the various social security programs currently in operation in the United States, the differences among them and their relationships to each other." Later: "I assume as my basic criterion that the primary purpose of this vast body of social legislation has been to assure a minimum of security to all Americans." Another Briton has recently said: "Of course the word insurance is a 'phoney,' because it takes contribution as equivalent to premium, and over-stresses the permanence of a subsidy, just as that subsidy is very difficult for the Nation to meet."

Dr. Burns follows through her main objective of "telling the story" of the Social Security programs. Her blind spot is an underestimate of the existing voluntary facilities, and the fact that the existence of these organizations, and the growing effectiveness of their services, must be taken into account even in determining the level of minimum benefits desirable for governmental establishment. She does discuss at some length the possible distribution of costs among the workers, their employers and the State, but seems little concerned over the burgeoning extent of subsidy. She does note that the "thruppence" (the Beveridge indication of the high degree of subsidy involved) adds to the employee's sense of unquestioned *rights*, almost as though he had really *paid for* his benefit.

She treats critically some of the "sacred cows"—experience rating in unemployment compensation, the preferential position of railway employees, the stiff neck of the Social Security actuaries, who refuse to set forth "most plausible costs" (not knowing them) but insist on giving two widely varying costs, a low and a high.

The new Bill 6000, and its predecessors, H.R. 2892 and H.R. 2893, she apparently had not seen, either, when the book went to press. The sprawling form, the evident uncertainty as to individual benefits, the alternative benefits—so as to "give more," the sheer complexity, the adoption of the *word* and the *idea* of permanent total disability—without any apparent feeling that it will cost anything or be administratively a major headache—these items should make interesting reading for Dr. Burns.

Finally her main recognition of insurance companies is to stress their profits, their competition and their inadequacies. In *Workmen's Compensation*, for instance, she accepts the ILO dictum that its administration should be entirely governmental.

Erban, Evzen. *Czechoslovak National Insurance—A Contribution to the Pattern of Social Security*. Orbis, Prague, 1948. Pp. 213.

This publication gives the English translation of the 1948 National Insurance Act of Czechoslovakia in full, together with an introduction by the Czechoslovakian Minister of Social Welfare, which summarizes the main provisions and sets forth his interpreta-

tion of the social philosophy underlying the adoption of the Act. This can only be fully sensed by a perusal of the sections, "In Retrospect," "Economic Aspects" and "Future Outlook"—interesting in their idealism and ideology.

The insurance act embraces all working people and provides for cash sickness and disability benefits, old-age, widow's and orphan's pensions, marriage grants, domestic service, funeral benefits, and medical care for the insured and their families, at an estimated cost of roughly 13% of the national income, in contrast with 8% under the previous system (contributions, exclusive of 1% for industrial accidents and 1% for unemployment assistance and training, are 16.8% of gross cash income, with further provision for State subsidy to the extent that reserves by the end of 1956 will be three times the sum expended on benefits in the year 1949).

The self-employed are included upon the thesis that with security against the various risks, "the hope of excessive profits" can be disregarded in the nationalization of production and distribution planning. Previous workers not eligible to pensions under the 1948 Act are entitled only to a basic "social benefit" on a needs basis. Children's allowances covered under a previous Act are not included in the above, and cases of unemployment are dealt with by the labor administration directly.

Contributions are looked upon as a social tax for redistributing the national income. The Act is viewed as one of revolution, but "only" as the "beginning of the development of national insurance," which will lead to a "new and better organization of society." It is believed that the working class will realize "the interdependence between the benefit of the individual and that of all other individuals and the interest of society," and "that the awareness of our people has reached a level which makes nonsense of all fears of abuse."

It is particularly interesting to see the communist viewpoint in transition. If there is to be no employer except the State, and if there are to be no wealthy taxpayers, the tripartite contribution base may be moving over to a single basis of contributions by the citizens. Dr. Schoenbaum, the former head of the program, suggested to some American actuaries some tight-rope walking both in the prewar and in the prospective postwar rationalizations. This attempt to square "principles" and "practice" can be viewed with considerable tolerance this side of the water. The perusal of virtually every propaganda report in social security is not only a discipline in basic logic, but brings in consideration of pot and kettle blackness.

Flynn, John T. *The Road Ahead. America's Creeping Revolution*. The Devin-Adair Company, New York, N.Y., 1949. Pp. 160.

In the general spirit of Hayek's *The Road to Serfdom*, Mr. Flynn goes to Britain, instead of Central Europe, for his precedent. His story has the ring of sincerity, conviction and documentation. He deplores the substitution of Collectivism for personal provision, and in a short, reasonable book he shows the "creeping quality" of our social changes—the dulling effect of fear and the steady loss of rights. Woven into the fabric of the story is the social security progress into the welfare state—the general pattern having, in the hang-over of the ancient feudalism of Britain, too many similarities to the Statism that Bismarck developed. Here Flynn has scope for his story as he did not have in the *Reader's Digest* article.

Handbook for Pension Planning. The Bureau of National Affairs, Washington, D.C., 1949. Pp. 363.

The handbook is a symposium prepared by seven contributors and the editorial staff of the Bureau of National Affairs. It covers many of the problems involved in the

establishment and maintenance of pension plans. Two of the chapters, "Financing a Pension Plan," by John B. St. John, and "How Much Is It Going To Cost?" by William W. Fellers, should be of value to actuarial students in their study of retirement plans. Other chapters deal with the tax and legal aspects of pension planning, and with the designing, selling, or amending of plans. The chapter dealing with the designing of a plan seems perhaps unduly simplified. A very desirable feature is the glossary of pension terms given as an appendix. The major hazard these days is the assumption that "there is any simple basic pension philosophy." It is more maturely dealt with, perhaps, in the sophisticated paper of Mr. Bronson appearing in this number of the *Transactions*.

Lawton, George. *Aging Successfully*. Columbia University Press, New York, N.Y. Pp. 281.

In this area of social security, where the early experiments have largely "come croppers" and the new ones seem to avoid learning from the old, this survey of human beings and their needs, which skirts the edge of social security, has definite value. It matches the conviction that what the older citizen needs is a job, with the common sense recognition that *if* great masses of the older persons are to be supported by their juniors the burden will not be relished by those bearing it. As a very minor item he expresses the belief that insurance payments are larger than assistance payments (which currently are nearly twice as large *per capita*). He also makes the hesitating suggestion that in assistance—and perhaps insurance—the man who works some should still have a bonus from assistance but that assistance payments end when he becomes really effective. The insurance agent reading the book ought to redouble his efforts to provide men with benefits which continue even through efficient personal performance.

Actuaries, familiar with the customary virtual ignoring of the facility of insurance and the opportunities for thrift generally, the apparent belief that our citizens live in unashamed irresponsibility, though the largest earners in the world, should be proud to find here a general belief that our citizens are neither the status-bound Teutons nor the British labour. George Lawton's characters frequently seem human, and potentially able to carry their own weight—though the removal of some prejudices against personal weight-pulling would be highly desirable.

With the highly unpredictable costs of the Old-Age and Survivors Insurance Program, the weight of the influence of a book like this might help to counteract the too-successful salesmanship of the Federal Security Agency in marketing pessimism. The author's common-sense observations on aging successfully are "good medicine."

Morley, Felix. *The Power in the People*. D. Van Nostrand Company, Inc., New York, N.Y. Pp. 308.

The ex-President of Haverford College, the former Editor of the *Washington Post*, the current Editor of *Human Events*, discusses the America which is (or was) ours, the purpose, the nature and the heritage, analyzes the strength and the weakness, discusses the State as distinct from society, the issue of authority, the meaning of self-government and free enterprise. The fundamental challenge as to the worth and validity of American political principles comes from the philosophy of government planning. Against this there is the chance to reanimate the characteristic of self-help, to counteract in social security the giving up to the appeal of yielding to the bargain.

Muntz, Earl E. *Growth and Trends in Social Security—Studies in Individual and Collective Security No. 6*. National Industrial Conference Board, New York, N.Y., 1949. Pp. 195.

The author intends this book to serve as a textbook or standard reference source for teachers and students of social security. The media for providing social protection against the risks of industrial accidents, unemployment, sickness, old-age, and allied risks are considered, with special reference to the history of the movement in Great Britain, Germany and the United States. The programs as they existed in 1948, together with the legislative proposals of the past few years (exclusive of 1949) are covered. Another topic of considerable importance is the status of social security in post-war Germany under the various military governments, where indirectly the United States is surely helping to foot the bills, when postponed benefits come due without capacity to meet them. When so forthright a critic of Social Security as Mr. Muntz enunciates his concluding "principles," they show the absence of the greater realism of Congressman Curtis in his Report—Additional Minority—within Report No. 1300, explaining the "Social Security Act Amendments of 1949," and the constructive proposals of W. M. Anderson for Canada in an address on Social Security, presented in Toronto on September 23, 1949, at the Second Ontario Conference on Social Welfare.

The Social Security Almanac, Studies in Individual and Collective Security No. 7. National Industrial Conference Board, New York, N.Y., 1949. Pp. 112.

This is a statistical compilation, covering government and private provision for "security." Primarily concerned with the United States, it also shows pertinent international data. Called a "handbook of facts," it faces the elusive quality of those "facts." In spite of, and because of, the carefully prepared glossary of terms, the user of these "facts" will find their selection and quotation difficult. Many a "label" necessarily carries both its connotations and its oversimplifications. A reader familiar with certain branches of the subjects may detect the euphemisms, the conflicts of ideology, even the subtle propaganda involved in a table caption. But the man not familiar is somewhat indoctrinated in some "isms."

Most tables are in the form of time series, usually extending through the year 1947. They cover statistics on employment, income, savings, insurance, retirement, veterans programs, public housing, vocational rehabilitation, workmen's compensation, and public education. As the first project of this kind, the results are noteworthy. Too many surveys of this kind neglect private provision for security, treating them as "the little man that isn't there," and reach thoroughly erroneous conclusions.

In spite of the tendency to turn accidental snap judgments into rigidities for the sake of comparability, after a couple of further editions, to take account of more dependable and mature analysis of our American scene, an annual edition of such a report would be desirable.

Schultz, William J. *Social Security and the Economics of Saving, Studies in Individual and Collective Security No. 5.* National Industrial Conference Board, New York, N.Y., 1948. Pp. 78.

This condensed treatise develops and summarizes various theories as to underlying reasons for cyclical fluctuations. The author is concerned because of the decrease in venture investment and finds that social security payroll taxes because of their inflexibility tend to aggravate the amplitude of business cycle fluctuations. Since funds are invested in Federal bonds, they are diverted from venture investment. In the report, he uses "Social Security" as synonymous with the two "Social Insurances," OASI and Unemployment Compensation. Public Assistance is also "Social Security." It succeeded in expending in the community as a whole, as inducements to the states to widen the public assistance programs, roughly the equivalent of the billion dollars "saved" by OASI,

from Federal funds in the current year, besides the billion left to the states to pay. In a sense those "contributing" to OASI have loaned their money to the whole body of citizens for the Federal subsidy provided to the states to meet the same type of benefits to the aged and the dependent children—largely to those who have been barred from receiving such benefits under OASI. All the citizens in this year of an unbalanced Federal budget are including in their debt-service in interest payments—we might almost say—interest also on this subsidy to states, which in turn is a help to the accumulation of the trust fund held for OASI. This is a challenging booklet, on major problems of the welfare state, its terminology, its economics, its significance.

W. R. W.

What Social Security Means to You. Conservative and Unionist Central Office, London, England. Pp. 72.

This pamphlet, probably to the surprise of many American Conservatives, claims *credit* belongs to the British Conservatives for practically the whole structure of Social Insurances, Assurances and Services, instead of attempting to place the *blame* for the sorry state of affairs upon the Labour Government. It is perhaps significant, as John Flynn indicates in his "The Road Ahead," that the "creeping paralysis" of Fabian Socialism has reached this point of acquiescence. There are eight chapters besides the index, the addenda and the foreword. Two of them, the introductory one, "How Social Security Was Planned," and a concluding chapter, "Conservative Work for Social Insurance," have between them one chapter on the Family Allowances Act of 1945, three on the 1946 Acts, National Insurance Act, National Insurance (Industrial Injuries) Act and National Health Service Act, and two on the 1948 Acts on National Insurance and Children.

So, instead of the Republican position so much criticized here of "me too," the shoe in Britain seems to be on the other foot, "Labour" saying "me too."

At current rates of exchange, the British single life Old Age Benefit of 26 shillings is under \$16 a month, much closer to a "floor of protection" than our variable benefits under the current Act or under H.R. 6000, where men counting on making \$250 a month, for enough years to get fully insured status, expect a base benefit of \$65 and some small increment.

Williamson, W. Rulon. *Employees Insurance Plans.* Section III, Book 5, *Reading Course in Executive Technique*, Funk and Wagnalls Company, New York, N.Y., 1948. Pp. 98.

The author's definition of "Insurance" is an "orderly, informed method of organized sharing by the use of which men who accept a personal responsibility for the meeting of certain contingent, presumptive, personal needs, through the good-will and teamwork of mutual cooperation provide benefits upon the incidence of the contingency and the emergence of such ensuing presumptive needs." Since the use of insurance is bringing many definitions to the fore, especially the frequent insistence that "Insurance is savings," it may be well to remember that most insurances are "pooled provision" rather far from a bank-account. Among the employee benefits considered are the various group life and disability insurances (including medical care), retirement programs, and salary allotment. The risks—death, disability and old age—and the attendant presumptive needs are approached from a statistical point of view, with emphasis upon the various means available for providing protection through employer-employee cooperation. Over-all sharing and the meeting of personal responsibility through these means are stressed.

ACTUARIAL AND OTHER ARTICLES OF INTEREST
IN RECENT PERIODICALS

In compiling this list, the Committee on Review has included only those papers which from their titles would appear to be of possible interest to members of the Society of Actuaries; and, in so doing, the Committee offers no opinion on the views which the various articles express.

References to only a limited number of papers on mathematical statistics and allied subjects are included. For a more complete list of such papers reference should be made to "Mathematical Reviews," sponsored by the American Mathematical Society and the Mathematical Association of America. Numerous articles on social insurance are listed each month in the "Social Security Bulletin" of the Social Security Board; and various articles are listed each month on social security, unemployment insurance, workmen's compensation, pensions, and health insurance in the "Monthly Labor Review." "Population Index," published quarterly by the School of Public Affairs, Princeton University, and the Population Association of America, lists numerous articles published throughout the world on mortality, fertility, marriage, divorce, and migration and on statistical methods of interest in such questions. "Statistical Methodology Index" in the *Journal of the American Statistical Association* should also be consulted. A much more comprehensive list of 1948 papers in several languages and from several countries, similar to those included herein, appears in *Mitteilungen der Vereinigung Schweizerischer Versicherungsmathematiker*, Volume 49, No. 2, October 1949.

TRANSACTIONS OF THE ACTUARIAL SOCIETY OF AMERICA

Vol. L, Part 1, May, 1949

Presidential Address: Actuaries and Insurance 1889-1949—H. R. Bassford.

The Revenue of the Period of Account and Its Relation to Premiums, Valuation and Dividends—W. D. Laird.

Mortality Experience According to Build on Standard Insurance in the Provident Mutual—B. F. Blair and L. W. Haines.

Actuaries—Past, Present and Future—J. R. Herman.

Actuarial Note: Certain Implications Which Arise When the Assumption Is Made That Premiums Are Paid Continuously and Death Benefits Are Paid at the Moment of Death—J. M. Boormeester.

Actuarial Note: Policy Expiry Date under Automatic Premium Loan Clause—A. E. Archibald.

Actuarial Note: Attained Age Valuation Constants for Policies with Varying Premiums—W. W. Steffen.

Legal Notes—B. M. Anderson.

Report of Committee on Aviation Statistics—May, 1949.

RECORD OF THE AMERICAN INSTITUTE OF ACTUARIES

Vol. XXXVIII, Part I, No. 77 (June, 1949)

Presidential Address—J. G. Beatty.

A Revised American Remarriage Table—A. M. Niessen.

Informal Discussion: Procedures in Actuarial Work; Underwriting; General Problems; Sales and Agency; Society of Actuaries.

JOURNAL OF THE INSTITUTE OF ACTUARIES

Vol. LXXIV, Part II, No. 339

- The Centenary of the Institute of Actuaries.
 The Actuarial Principles of Investment—J. B. H. Pegler.
 The Effect of Changed Economic Conditions and State Insurance on Private Pension Fund Benefits, Contributions and Valuations—W. F. Marples.
 Punched-card Equipment—N. E. Coe, K. J. Hedley and L. H. Longley-Cook.
 The Measurement of Reproductivity—A. H. Pollard.
 The Rationale of the Use of the Geometric Average as an Investment Index—C. D. Rich.
 The Balance of the Sexes in Great Britain—W. S. Hocking.
 The Recent Trend of Mortality in England and Wales—W. S. Hocking.
 Legal Notes—E. J. Macgillivray.

THE ACTUARIAL SOCIETY OF AUSTRALASIA

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- Presidential Address—J. B. Fletcher.
 The Application of Aptitude Tests to the Selection of Actuarial Students—E. F. W. Sumner.
 Children's Interests in Policies—P. C. Wickens.
 The Net Premium Valuation of Children's Deferred Assurances—J. G. Rutherford.
 Some Remarks on Voluntary Group Assurance—A. H. Pollard.
 Industrial Assurance—A Comparison and a Contrast—G. B. Palmer.

BULLETIN COMITÉ PERMANENT DES CONGRÈS INTERNATIONAUX D'ACTUAIRES

No. 46, June 30, 1949

- International Actuarial Notation.
 Review of Insurance in the United States—J. S. Elston.

PROCEEDINGS OF THE CASUALTY ACTUARIAL SOCIETY

Vol. XXXV, No. 65 (1948)

- Presidential Address: More Casualty Actuaries Are Needed—J. M. Cahill.
 New York Compensation Rate Making—R. A. Johnson, Jr.
 Workmen's Compensation D-Ratio Revision—A. L. Bailey.
 Valuation of the Death Benefits Provided by the Workmen's Compensation Law of New York—H. W. Schloss.

JOURNAL OF THE INSTITUTE OF ACTUARIES STUDENTS SOCIETY

Vol. VIII, Part 2, October, 1948

- Computing Methods—D. H. Sadler.
 The Use of Normal Significance Limits when the Parent Population Is of Laplace Form—L. Edwards.
 Sheppard's Correction to the Variance—H. M. Finucan.
 Karup's Theorem of Multiple Decrement.
 Factor Analysis and Its Application in Aptitude Testing—D. M. Edwards.

Part 3, January, 1949

- Disability Benefits in Conjunction with Life Assurance Policies—H. F. Purchase.
 A Nomogram for Calculating Extended Terms—J. G. L. Michel.
 Mathematics and the Actuary—S. Vajda.
 The Conversion of Whole Life Extras into Extra Premiums for Other Classes of Assurance—P. T. Jenkins.
 Annuities Certain at Linearly Decreasing Rates of Interest—R. E. Beard.
 The Mathematics of Non-Life Insurance—Paul Riebesell.

 MITTEILUNGEN DER VEREINIGUNG SCHWEIZERISCHER
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- Summarische Berechnung der Prämienreserve ohne Gruppenbildung ("Approximate Calculation of the Total Reserves without Subdivision into Groups")—Gunther Albers and Gerhard Köhler.
- Sur les probabilités d'arrivée des événements en nombre infini ("On the Probabilities of the Happening of Events in Infinite Number")—E. Franckx.
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- On the Central Limit Theorem in the Case of Not Equally Distributed Random Variables—Harald Bergstrom.
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- Ein grundsätzlicher Beitrag zum Verhältnis des prospektiv und retrospektiv gerechneten Deckungskapitals ("A Fundamental Contribution on the Relationship of Prospective and Retrospective Reserves")—H. Ruch.
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- On Premium Calculation in the Case of a Temporary Life Insurance for a Varying Amount—Bengt Akerberg.

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