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BOOK REVIEWS AND NOTICES*

E. L. Hicks, C.P.A., *Accounting for the Cost of Pension Plans*, pp. xvi, 159, "Accounting Research Study No. 8," American Institute of Certified Public Accountants, New York, 1965.

Background

Publication of Accounting Research Study No. 8 brings to a conclusion nearly five years of information-gathering, discussion, drafting, and editing by the research staff of the American Institute of Certified Public Accountants. This project was begun while Dr. Maurice Moonitz, of the University of California, was director of accounting research; the author of the final study was Ernest L. Hicks, a partner of a major accounting firm. The Project Advisory Committee appointed to consult with the director and his staff consisted, at one time or another, of one partner from each of four major accounting firms, four representatives of industrial organizations, and three professional men (including two members of the Society of Actuaries—B. Russell Thomas, F.S.A., and Sylvester J. Huse, A.S.A.).

A Committee To Study Pension Accounting was established by the Society of Actuaries in September, 1960, in order to serve as a "listening post" on this project, to discuss various aspects of the question with accountants, and to provide such information and assistance on actuarial matters as might be appropriate. This Committee reviewed three preliminary drafts of the accountants' study and made a number of suggestions through its individual members as well as in the form of a committee draft of "actuarial guidelines." Two members of this Committee, Frederick P. Sloat and Charles L. Trowbridge, were singled out in the "credits" given by the author of Accounting Research Study No. 8. Another member of the Committee, Preston C. Bassett, authored a paper in 1964 (*TSA*, XVI) entitled "Accounting for Pension Plan Costs on Corporate Financial Statements," which stemmed in part from the deliberations of this Committee.

To put this study in proper perspective insofar as the establishment of accounting policy and practice is concerned, the following four paragraphs are quoted from the "Statement of Policy" appearing on its inside cover.

STATEMENT OF POLICY

The Accounting Principles Board is the only agency of the American Institute of Certified Public Accountants having authority to make or approve public pronouncements on accounting principles. This accounting research study has not been approved, disapproved, or otherwise acted on by the Board or by the membership or the governing body of the Institute.

* Books and other publications noted with an asterisk (*) may be borrowed from the library of the Society of Actuaries under the rules stated in the *Year Book*.

Accounting research studies are published by the Director of Accounting Research of the American Institute of Certified Public Accountants as part of the Institute's accounting research program. The purpose of this program is to provide professional accountants and others interested in the development of accounting with an informative discussion of accounting problems under review. The studies also furnish a vehicle for the exposure of matters for consideration and experimentation prior to the issuance of pronouncements by the Accounting Principles Board.

The author of this accounting research study is responsible for the content, conclusions, and recommendations. The study does not necessarily reflect the views of the Accounting Principles Board, the project advisory committee, or the Director of Accounting Research.

Individuals and groups are invited to express their views with supporting reasons on the matters in this study. The Accounting Principles Board will consider these comments in forming its conclusions on the subject.

Scope of the Published Study

In addition to the conclusions and recommendations, which will be commented upon later, the study discusses in considerable detail the following points:

THE PENSION ENVIRONMENT

Present Accounting Practices (Timing the Charges to Expense, Presentation in Financial Statements)
Provisions of Pension Plans (Classification of Plans, Documents, Eligibility, Retirement Age, Benefits, Credited Service, Vesting, Employer Contributions, Employee Contributions, Limitation of Employer's Liability)

TIMING THE CHARGES TO EXPENSE

Underlying Concepts
Choice of Basis of Accounting
Applying the Accrual Basis
Normal Cost
Past-Service Cost
Increase in Prior Service Cost upon Amendment
Actuarial Gains and Losses
Unrealized Appreciation
Transition to Recommended Procedures

PRESENTATION IN FINANCIAL STATEMENTS

Existing Guidelines
Disclosure in the Body of the Financial Statements
Disclosure in a Note
Conclusions

Summary of Principal Conclusions and Recommendations

The one recommendation of this study which is fundamental to all the others is that pension costs should be accounted for on the accrual basis rather than the cash basis, which has been generally followed in the past. Although the study allows the employer some leeway in the selection of the period for amortization of the past-service cost, the author expects the employer to select a specific amortization period to be used in determining the accounting charge to be made each year. Under this fundamental recommendation, if the employer selects a 30-year amortization period, the accounting charge will be normal cost and 30-year amortization, even though the employer contributes more or less than this amount. If the employer contributes more than the accounting charge, an asset would appear on the employer's balance sheet; if the contribution is less than the accounting charge, a liability would appear.

Conclusions of the study which will have a bearing upon the amount of the accounting charge to be made on the accrual basis in accordance with the fundamental recommendation, and those which specify the balance sheet and disclosure requirements, are as follows:

1. "*It is a conclusion of this study that the actuarial cost methods presently used in calculating payments under pension plans are acceptable for use in accrual accounting if they are applied in accordance with the other conclusions of the study.* (*Pay-as-you-go* and *terminal funding* are unacceptable because they do not make provision for the cost of future retirement benefits during employees' periods of active service.)"

2. "*It is a conclusion of this study that provision should be made annually for the normal cost of a pension plan*—the cost assigned, under the actuarial cost method used, to years subsequent to the inception of the plan."

3. "*It is a conclusion of this study that past-service cost should be taken into expense (together with related charges for interest) systematically over a reasonable period following the inception of a pension plan.*" Although the author presents an argument to the effect that the weighted average of the remaining service lives of active employees should be a starting point in determining the accrual period for past-service cost, he states that "a reasonable range would seem to be from a minimum of ten years to a maximum of forty years."

4. "*It is a conclusion of this study that an increase in prior service cost, resulting from an amendment of a pension plan increasing benefits, should be taken into expense (together with related charges for interest) systematically over a reasoanble period following the effective date of the amendment.*" As in the case of his opinion concerning past-service cost, the author suggests the average remaining service lives of active employees at the time of amendment should be a starting point for the amortization period, but he does not specifically mention the range of ten to forty years in connection with this conclusion.

5. "*It is a conclusion of this study that actuarial gains and losses should in most instances be spread over the current year and future years.*" There may, however, be special circumstances under which spreading is not appropriate, such as the closing of a plant or a business combination.

6. "*It is a conclusion of this study that unrealized appreciation or depreciation of common stocks (and, in some instances, bonds and investments of other types) in a pension fund should be recognized systematically in estimating the employer's pension cost for accounting purposes.*" However, the study favors the use of a procedure which does not give undue weight to short-term market fluctuations.

7. "*It is a conclusion of this study that present employees who may reasonably be expected to become participants in a pension plan should be included in calculations of the cost of the plan for accounting purposes.*

"In practice, it may be desirable to exclude employees during an initial period of service in which turnover is high (for example, three years). This may simplify the calculations without significantly changing the annual amount."

8. "*It is a conclusion of this study that, if the contributions to a pension fund differ from the accounting charges, the latter should include (or be reduced by) interest on the difference between the actual pension fund and a theoretical fund which would have been produced on the basis of the accounting charges.*"

9. "*It is a conclusion of this study that the unfunded prior service cost of a pension plan is not a liability which must be shown in the balance sheet of an employer. Ordinarily, the amount to be shown for pension cost in the employer's balance sheet is the difference between the amount which has been charged to expense in accordance with the recommendations of this study and the amount which has been paid. If, as may occur in rare instances, participants' vested rights are a liability of the employer, the unfunded present value should appear as a liability; if the employer accounts for the cost of the plan in conformity with the recommendations of this study, the amount should be carried forward as a deferred charge to operations.*"

10. "*It is a conclusion of this study that routine pension disclosures should not ordinarily be necessary in the financial statements of companies whose accounting for pension cost conforms with the recommendations of the study. If, however, a change in an accounting practice or an accounting change necessitated by altered conditions affects the comparability of the employer's financial statements as between accounting periods, the change and its effect should be disclosed.*"

Under "Other Considerations," the author points out that, notwithstanding the important role played by the actuary in making cost determinations, the final responsibility for recording these costs falls on the corporate executive in charge of the employer's financial statements. Thus the author states that it is the executive's responsibility to discuss with the actuary the choice of actuarial cost methods and assumptions and to satisfy himself that methods are acceptable for accounting purposes and that the results are reasonable. This "conclusion" most certainly points up the responsibility of the actuary to lead his client's thinking on the subject.

Accounting Research Study No. 8 was written without cognizance of certain special situations which occasionally arise under pension plans—for instance, the special form of pension benefit introduced in the 1964 automotive settlements, known as the Supplemental Allowance. This benefit, payable for a limited period of years rather than for the lifetime of the pensioner, and subject to absolute termination during such limited period if the individual should earn income in excess of a specified amount, is implemented by contributions on a modified "pay-as-you-go" basis (a basis entirely logical under the circumstances). Technically, this would violate the study's recognition of acceptable actuarial cost methods, unless, of course, this type of special benefit is interpreted to be other than a pension benefit.

Another special situation which has not been adequately considered concerns the intended application of the study's conclusions to pension costs incurred outside the United States. This points up a conceptual inconsistency between the study and regulations in a location such as Ontario, Canada, where the single-premium unit-purchase method is quite acceptable for "testing" the adequacy of past funding, even where a different method of valuation is used for contribution purposes. Mr. Hicks apparently shuns the unit-purchase method of determining whether the accrued liabilities are funded unless at the same time the actuary shifts to that method for determining cost charges. Many actuaries, including the senior one on the Project Advisory Committee, disagree with the author's position on this point.

This question of testing the degree of funding, of course, bears on the proposition that "accrued liabilities" must necessarily some day be fully amortized—accountingwise or otherwise—without due regard for the distinction which should be made between concepts of accrued liability by different cost methods. Actuaries have been somewhat remiss in failing to bring more light to this question. The full amortization of the *one-sum cost of accrued benefits* may be a reasonable objective, as the study seems to recognize, but the "accrued liabilities" by many cost methods are far in excess of this one-sum cost.

One may well ask why a company should ever be *required* to accumulate pension plan assets (or charge to pension costs) more than it would take to satisfy all benefit obligations accrued to any given point of time. Yet this is what would happen if "accrued liabilities" by certain cost methods were required to be fully amortized or charged. True, a company might *wish* to accumulate more assets than it would take to satisfy accrued benefit obligations, in order to tide it over a rainy day or to level out future costs, but there is no reason related to employee security which would *require* this—and equity between stockholders obviously argues against it.

There are a number of points on which actuaries and others may disagree with the author of this study—particularly with regard to a proper definition of "past-service cost" and the charging of such cost. In a dissenting opinion published with the study, B. Russell Thomas stated:

> 1. Annual normal cost and interest on past service cost is the true long-range measure of annual costs of a pension plan. If costs are to be determined on a "going concern" basis without regard to either (*a*) the possibility of termination of the plan or (*b*) any legal obligation assumed by the employer to contribute a greater amount, normal cost and interest would constitute the appropriate accounting charge.
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> 2. Contributions to a pension fund in excess of normal cost and interest, whether made voluntarily by the employer or made because of the employer's legal liability under the plan, should be treated as added costs for the year in which made, unless it can be shown that they are abnormal contributions which should be spread over a limited period of years. (For example, payment of all or a substantial portion of the past service cost in a single year should result in charges spread over a period of several years.)

In another dissenting opinion, W. A. Walker stated:

> Past-service costs are generally related to past service so there is no logic in saying that past-service costs must be written off in a specific pattern in order to match costs and revenues when in reality there is no relation between such costs and current revenues. . . . Such past-service costs are undertaken for the benefit of the plan as a whole and not necessarily for the benefit of any individual employee, and as such the benefits to be expected from them are indefinite in duration.

John Hanson, an actuary who has written a number of articles on this question, states:

In my opinion, Research Study No. 8 is defective in that it does not consider the following two essentials:

1. It does not come to grips with the actuarial nature of the past-service cost. . . . If the past-service cost were the simple thing it is defined to be in Research Study No. 8, there would be no logical basis for the normal cost and interest contribution level which is followed year in and year out and indefinitely into the future by many employers on a sound and conservative basis.

2. It does not consider the reasons why a full charging of cost before retirement is not necessary in order to match pension costs and revenue.

A number of actuaries, including certain members of the Society Committee To Study Pension Accounting, have expressed the opinion that pension costs should not be required to be reported on an accrual basis. As Howard Hennington has expressed it,

I recognize the *desirability* of accrual accounting but do not favor a *requirement* to this effect. If an employer contributes to the pension plan an amount different from the accrual cost, the resulting asset or liability items are likely to be misleading. If an employer feels compelled to contribute to the pension plan an amount equal to the accrual cost in order to avoid the misleading asset or liability items, the flexibility which the employer has under present circumstances will become restricted. . . . A position opposing accrual accounting is more tenable if there is a reasonable alternative to meet the legitimate criticisms noted by the accounting profession. A proposal as an alternative is to require a rather complete footnote disclosure of accrual costs giving

a) a statement of the amount charged to operations,
b) a statement of an appropriate accrual cost, and
c) a brief description of the actuarial basis for determining the accrual cost together with a description of any changes in the actuarial basis used for the accrual cost.

While, strictly speaking, the question of cash or accrual accounting lies in the province of the accountant, there is a considerable body of informed opinion which supports the foregoing view.

Many persons may question whether the underlying concept of relatively inflexible pension charges to operations is desirable. In a field which has benefited so much from flexible funding arrangements and the continual development of new financing concepts, it would seem unfortunate to impose too much uniformity—whether through accounting rules or legislation. While accountants may argue that accounting charges are not synonymous with pension contributions (as, of course, in theory they are not), many observers believe that uniform accounting practices would tend to be mirrored in the contributions. Indeed, such practices might set a pattern for legislation and IRS regulation on the subject and thereby destroy the flexibility which has existed beneficially in the past.

Notwithstanding a number of valid criticisms of this study, the author has done a creditable job on a difficult research project.

FRANK L. GRIFFIN, JR.

William F. Marples, *Actuarial Aspects of Pension Security*, pp. xix, 210, Richard D. Irwin, Inc., Homewood, Illinois, 1965.

This book is the last of a five-volume series published by the Pension Research Council of the University of Pennsylvania on the general subject of the security of private pension expectations. It deals with that portion of the subject of greatest interest to actuaries and should be of value to many serious students of pensions. All the earlier publications in this series have been reviewed in the *Transactions: Legal Protection of Private Pension Expectations*, by Professor E. W. Patterson, in *TSA*, XIII, 45; *Legal Status of Employee Benefit Rights under Private Pension Plans*, by Professor B. Aaron, in *TSA*, XIII, 652; *Decision and Influence Processes in Private Pension Plans*, by Professor J. E. McNulty, Jr., in *TSA*, XIV, 182; and *Fulfilling Pension Expectations*, by Professor D. M. McGill, in *TSA*, XIV, 539.

The Pension Research Council of the Wharton School of Finance and Commerce was created in 1952 for the purpose of sponsoring objective research in the area of private pensions. The project which this volume completes was begun in 1958 with Professor McGill as the project director. As explained in the Foreword of this volume, in the original plan of this series, the capstone, *Fulfilling Pension Expectations*, was to be based on the foundations established by the other four. However, difficulties encountered in the preparation of this volume delayed its publication until last. For each volume of the series, except the one written by Professor McGill, a task force representative of various interest groups in the pension field was formed to participate in the specific research program and to act as a sounding board for the conclusions reached. Originally, each task force was to be headed by an academician, who was expected to conduct the research and prepare a report of his findings. Professor Carl Fischer, of the University of Michigan, was the Chairman of Task Force II, to which was assigned the subject which has culminated in this volume. After Professor Fischer submitted a draft report for review by Task Force II and the Pension Research Council, the conclusion was reached that the original scope of matters to be covered by this book should be significantly broadened; in the face of his other commitments, Professor Fischer found it impossible to undertake the broader assignment. Accordingly, he relinquished further research and drafting to Mr. Marples, who was already a member of Task Force II.

Mr. Marples, a Fellow of the Institute of Actuaries and an Associate of the Society of Actuaries, is a consulting actuary with Alexander & Alexander in Los Angeles. He has had many years of extensive pension experience, both in the United States and England.

The subject of this book includes many sensitive areas. The author indicates, with what seems to be great understatement, that he prepared several drafts which were reviewed and debated by members of the Task Force, the Pension Research Council, and other distinguished actuaries, and that "attempts to reconcile conflicting points of view plus the need to develop new terminology in the area of actuarial cost methods, delayed the final product far beyond expectations." The book, as published, represents only the views of the author but reflects the influence upon him of many others.

Other recent publications in the field of pensions have included discussions of some topics related to the subject of this book. Undoubtedly the most important, as well as the most widely publicized, is the report to the President of the United States entitled *Public Policy and Private Pension Programs*, by the President's Committee on Corporate Pension Funds and Other Private Retirement and Welfare Programs, which was made public in January, 1965. Another significant contribution is *Accounting for the Cost of Pension Plans*, by Ernest L. Hicks, C.P.A., published in 1965 by the American Institute of Certified Public Accountants as "Accounting Research Study No. 8."

In the first chapter Mr. Marples provides a very brief history of pensions and indicates the basic functions of an actuary for such plans as being related primarily to the need "to deal with the uncertainties of events," "to develop financing systems with predictable limits," and "to illuminate the effect of actual or potential policy decisions by mathematical calculations of cost."

Chapter ii is devoted to a discussion of pension plan design. Here one begins to see a basic difficulty, perhaps inescapable, in books of this nature. In order to make the book reasonably self-contained for all the different kinds of individuals who have a genuine interest in the primary subject under discussion, it is necessary to include a substantial amount of material that is adequately covered in other texts and may well be superfluous to the needs of many readers. This chapter and the succeeding chapter cover the basic elements of pensions which must first be understood in order that their actuarial significance may be considered.

In any technical subject with widespread public interest, like pensions, the terminology used to convey ideas is, of course, very important. Typically, as in this volume, the word "trustee" appears to denote the entity which has fiduciary responsibilities, but, in reality, in most cases the trustee, especially if it is a corporate trustee, is limited in function to matters related to the investment of the funds of the plan and has no authority whatever to deal with matters relating to the rights of the plan beneficiaries. To use the word "employer" to denote the organization which deals with such rights tends to blur the distinction between (1) the employer as a corporate entity which employs the beneficiaries of the plan and makes the contributions to the pension fund on their behalf and (2) the representatives of the employer who are acting in a fiduciary capacity with respect to the rights created by the pension plan for such employees. This blurring is particularly inappropriate for the case of multiemployer, negotiated plans where the trustees include labor representatives. It is suggested that the terms "fund investment manager" and "plan trustees" might better denote the essential roles here assigned to "trustee" and "employer," and the term "employer" might be used to mean the entity which employs the beneficiaries and makes pension contributions on their behalf.

Chapter iii discusses the benefit formula structure of pension plans, with emphasis on the significance of their elements of potential uncertainty and hence of possible danger to pension security. The brief discussion of variable annuity pension plans on page 45 has been outdated by recent events. The Securities and Exchange Commission now permits a life insurance company to offer certain types of variable annuity contracts without complying with the Investment Company Act of 1940. Under these arrangements the contracts must be on a group basis and issued in connection with a qualified retirement plan covering at least 25 individuals, under which no employee contributions are applied to provide variable benefits. By legislative action in many states in or before 1965, such variable annuity contracts may now be issued in over 25 states.

There is also a brief discussion of cost-of-living plans on pages 45 and 111. However, there is no mention, not even in the discussion of the ultimate "standard of comparison plan" on page 47, of the possibility of providing benefits to retired employees which vary in accordance with changes in average wages of active employees. Under such "wage-linked" plans, the objective is not only to protect the pensions of retired employees against inflation but also to give retired employees a means of participating in the increasing productivity of our society which is reflected in our rising standard of living. It is believed that such arrangements have, in the past, been limited primarily to some local government plans, as those for police and firemen.

Chapter iv, which discusses the actuarial cost determinants, clearly delineates the nature of each of the fundamental assumptions which must be made to evaluate the cost implications of a pension plan. For the actuary who is not a pension specialist, this is a very useful review; for the serious nonactuary, it is a fine primer, which would be of still greater value if concrete illustrations were provided. Many actuarial concepts—like "select and ultimate" rates of withdrawal, "projected" or generation mortality rates, retirement rates, and salary scales—can benefit from such illumination. Furthermore, it would be helpful if there were provided some indications of the financial implications of the use of these assumptions, where they are optional, as in the case of salary scales for some types of plans, and of plausible variations in any assumptions used.

The discussion of the role of the interest rate indicates that the prime responsibility for proposing the rate devolves upon the actuary. This is undoubtedly a statement of the facts in many situations today, but strong argument can be made for this assumption to be determined by the financial managers of the plan after consultation with both the investment manager and the actuary: there should be less separation between the parties respectively responsible for the assets and liabilities. An important aspect of this question today relates to the increasing use of substantial proportions of equities in pension funds. Mr. Marples' discussion does not indicate the nature of the questions involved in determining an appropriate interest assumption for plans funded in this manner. Should the interest assumption reflect only the dividend income expected to be derived from common stocks, or a portion, or all of the appreciation? Or how should the interest assumption reflect the use of equities?

Chapter v develops the concept of pension funding programs, and discusses their economic aspects as well as the actuarial cost methods, without regard to the funding instrument to be used, which seems proper. The various funding arrangements are treated in later chapters. For the actuarial cost methods a new nomenclature is used, based upon the work of the Committee on Pension and Profit Sharing Terminology formed under the joint auspices of the Pension Research Council and the Commission on Insurance Terminology. This chapter provides a good verbal treatment of the subject for the very serious nonspecialist, but it is questionable whether anyone who has not worked in this field can get a solid grasp of the methods from this material, in the absence of mathematical examples and a discussion of their relative characteristics as illustrated by such examples.

Chapter vi is on investment income and asset valuation. The latter is primarily discussed in terms of the proper value to place upon common stocks held for pension purposes. Perhaps some reference would be desirable to the possible difference in the value to be ascribed to assets for different purposes. For example, even if cost value of stocks is used for determining employer contributions, for the reasons given by the author, market values may be appropriate from the standpoint of the security of benefits to the covered employees, in accordance with the Benefit Security Ratio concept suggested by Mr. Frank Griffin in his paper, "Pension Security and Funding Regulation" (*Proceedings of the Conference of Actuaries in Public Practice*, Vol. XIV).

Chapter vii deals with unallocated funding arrangements, including trust funds as well as deposit administration and immediate participation guarantee contracts. This is a clear presentation of the essentials of these arrangements. A few minor comments may be in order. Many would differ with the statement (on p. 119) that the assets of a fund are increased by realizing a gain on sale. Also, the availability of group variable annuity contracts from insurance companies has outdated the statement on page 122 relating to the termination of a trusteed variable annuity plan; now, a fully paid-up contract may be obtained in many states to continue to pay the benefits purchased on a variable basis. The discussion of IPG contracts on page 127 describes the procedure of many insurance companies; however, at least one company offers IPG contracts in which an annuity is actually purchased as each employee retires and annuity cost readjustments are made each year. In such a contract, the term "retired life fund" or "annuity purchase fund," as defined by the author, may be inappropriate. For the nonspecialist, an illustration of the investment year interest method would undoubtedly be helpful.

Chapter viii discusses allocated and combination funding arrangements. The allocated methods include individual policy pension trusts, group permanent contracts, and group deferred annuity contracts. The author indicates little sympathy, in any case, for individual policy plans which he considers to have the disadvantages of rigidity and costliness. This seems too broad a generalization; for the employees of rather small employers, the fixed premiums payable at regular intervals may provide a substantial measure of pension security at costs which are reasonably in line with those attendant upon any other arrangements available to employers of such size. In other places, too, the author indicates a slight and perhaps unconscious bias against insurance company products. For example, page 139 includes the following statements: "In all sound and properly managed insurance companies there is no question but that the premiums are adequate and payment will be made by the insurance company in the amounts and at the times stated in the contract. It follows that the premiums developed in an individual policy plan are completely adequate and the only question is whether the benefit is equally so." These statements, in their context, as well as the statements on page 126—that an insurance company "does not assume risks without receiving the appropriate premiums"—may well give many readers who know less than the author the unintended impression that on each and every policy or contract issued, the insurance company is absolutely certain of taking in more than enough money from premiums to pay all the benefits, whereas, in actual fact, of course, and particularly on individual policies and small group contracts, the premiums, which are *expected* to be appropriate and adequate at issue, may well turn out otherwise on specific plans, with the contract-holders benefiting from the guarantees.

Chapter ix is concerned with multiemployer pension plans including, but not limited to, negotiated plans. This is an excellent introduction to the essential elements of such plans and their actuarial implications as well as administrative problems. However, it does not point up the particular significance, for such plans, of the problem of valuation of common stocks.

Chapter x deals with the assurance of actuarial responsibility, covering various phases of the professional practices of actuaries. This should be good for the edification of employers and others who may have occasion to work with actuaries and who expect to obtain suitable professional advice. It describes the various actuarial organizations in the United States as of the time of writing and their guides to professional conduct; it also refers to the American Academy of Actuaries (which was established on October 25, 1965) and the role which it may be expected to play in the accreditation of actuaries.

The author's brief discussion of potential conflict of interest situations involving actuaries again seems to bring out his inherent point of view as a consulting actuary. Surely the insurance company actuary represents his company and only his company on matters relating to the choice of funding agency; but this relationship is obvious to all and can hardly be misleading. So, too, is the effect of his company relationship on the insurance company actuary's position on matters relating to the terms of the insurance company contracts. But, on all other pension matters requiring decisions, there are unlikely to be any restrictions on his freedom of action arising from his company's policy. His company relationship would *not* appear to cause any restrictions "in the area of the amount of deposits or premiums and in connection with administrative procedures." It is not clear what the author has in mind, on page 177, in suggesting that actuaries employed by insurance companies "might be barred from offering professional advice outside the limits of the proposals for services to be rendered by their insurance company." It is hard to understand why the author might suggest that an insurance company actuary should be barred from determining the liabilities of a pension plan funded under a deposit administration contract. Surely, there can be no hidden conflict of interest in this situation.

Mr. Marples apparently does not see other more subtle problems on his side of the fence. For example, the working relationship which exists in some cases between a consulting actuary and banks or other funding institutions may impair the freedom of the consulting actuary on the matters relating to the choice of funding agency—and this relationship to the funding agency is much less apparent to the client than in the case of the insurance company actuary. Furthermore, with the recent development of the more flexible group annuity contracts, including investment year methods and separate accounts invested in equities, matters related to the choice of funding agency have become largely a matter of evaluating past investment results and their significance for future investment performance, a role in which few actuaries today would consider themselves professionally expert.

It is unfortunate if estimates of pension plan costs made by insurance company actuaries under deposit administration contracts are sometimes mistaken for guaranteed costs. However, incomplete statements, which the author ascribes only to quotations made by some insurance company representatives, have been known to be made also by some consulting actuaries. Opportunism, expediency, and unprofessional conduct can occur on both sides of the fence and are deplorable in all cases.

The final chapter, xi, is a brief summary of the entire text. Appendices contain (*a*) statistics of pension funds, including some indications of comparative investment yields (on a basis which is too simple to be valid); (*b*) the Guide to Professional Conduct of the Society of Actuaries in effect at the time of writing (which has since been modified by the Society) and the Code of Professional Ethics of the Conference of Actuaries; and (*c*) the actuarial report form required by the Insurance Department of the state of Wisconsin from each pension plan over which it has jurisdiction.

Mr. Marples has provided us with a fine discussion of a subject in which all actuaries should be generally well informed, especially as it becomes a matter of broad public interest, spurred on by developments such as the report of the President's Committee on Corporate Pension Plans.

MEYER MELNIKOFF

J. E. Walsh, *Handbook of Nonparametric Statistics*, Volume II, pp. xxvi, 686, D. Van Nostrand Company, Inc., Princeton, New Jersey, 1965.

This is the second of a projected three-volume series that will organize and present the developments in nonparametric statistics before 1958. This volume summarizes nonparametric approaches to the two- and several-sample problems and to tests of population symmetry; it also contains results on extreme populations and observations.

The first volume in this series, published in 1962, covered tests of randomness, Tchebycheff type inequalities, point and interval estimates of parameters, and tests and estimates related to the cumulative distribution function.

This series clearly represents a prodigious amount of work on the part of the author (an Associate of the Society). Nonparametric statistics is a rapidly developing field. To define the somewhat vague boundaries of this field and then to summarize what is within these boundaries, even when limited to pre-1958 developments, is manifestly a tremendous endeavor.

The prospective user of this book should take the title very seriously, for it fairly represents the contents. The book is not a statistical cookbook, for it contains no worked numerical examples. It is not a textbook or treatise, for few complete developments or proofs are presented. Instead, a valuable bibliography containing 339 entries is used to indicate where such material may be found. However, this book is much, much more than a bibliography, for the various tests and procedures are described in considerable detail.

The user of this handbook must have a reasonable amount of statistical training. Even with this background, the prospective reader must condition himself to the unique organization of the book. The various tests and procedures are presented in a rigid and standard format, using a nonstandard and highly condensed notation. This notation is explained on the inside covers and in the first chapter. The terse summaries are preceded by long, informal discussions of the statistical problem under consideration. Often these discussions contain gems of statistical wisdom, but also, at times, they may seem rather vague and inexact to the statistically unsophisticated reader.

Actuaries will welcome the attention given to life-testing applications of tests to determine if two random variables have identical distributions (the two-sample problem). Since this is the problem that actuaries face when they seek to determine if two risk classes have identical survival functions, it would seem that actuarial applications are a possibility.

The final chapter contains a great deal of practical information on the application of the asymptotic distributions of the largest (and smallest) order statistic. The fourth ASTIN Colloquium, held in Trieste in 1963, was in part devoted to the insurance applications of extreme value theory. The papers contained in Volume II of the *ASTIN Bulletin*, when read in conjunction with chapter vii of the book being reviewed, would provide an actuarial reader with a good grounding in this topic.

JAMES C. HICKMAN

SELECT CURRENT BIBLIOGRAPHY

In compiling this list, the Committee on Review has digested only those papers which appear to be of direct interest to members of the Society of Actuaries; in doing so, the Committee offers no opinion on the views which the various articles express. The digested articles will be listed under the following subject matter classifications:

1—"Actuarial and Other Mathematics, Statistics, Graduation"; 2—"Life Insurance and Annuities"; 3—"Health Insurance"; 4—"Social Security"; 5—"Other Topics."

The review section of the *Journal of the Institute of Actuaries* contains digests in English of articles appearing in foreign actuarial journals.

Actuarial and Other Mathematics, Statistics, Graduation

U.S. National Center for Health Statistics, *Design of Sample Surveys To Estimate the Prevalence of Rare Diseases: Three Unbiased Estimates*, pp. 8, Public Health Service Publication No. 1,000, Series 2, No. 11, Washington, October, 1965.

To estimate the prevalance of diagnosed cases of a rare disease, a stratified random sample design is proposed. Three formulas, differing in the extent that they use information collected in the sample survey, are presented for deriving unbiased estimates of the number of diagnosed cases. The variances of these estimates are discussed.

Life Insurance and Annuities

F. A. L. Mathewson, C. C. Brereton, W. A. Keltie, and G. I. Paul, "The University of Manitoba Follow-up Study: A Prospective Investigation of Cardiovascular Disease," *The Canadian Medical Association Journal*, vol. 92, p. 947, May 1, 1965, and p. 1002, May 8, 1965.

The authors report on the mortality experience of 3,983 healthy adult males traced from July, 1948, to June, 1963. The men, 91 per cent of whom were under age 40, were subjected to repeated health examinations. They were initially selected for pilot duty and thus were required to meet high physical standards. The re-examinations, including electrocardiograms, were made at four-year intervals. The purpose of the study was to search for etiological factors among those who acquired coronary heart disease and hypertension compared with those who remained free. The mortality used as a standard of comparison was that of males in the general population according to the Canadian Life Table, 1955–57. The abstract states that:

"Variations in build or mean heart rate were not found to be related to the occurrence of coronary heart disease. The risk of coronary heart disease rose progressively as blood pressure increased. With readings of 160/95 mm. Hg or higher the risk was 1.77 times that of the population as a whole. Non-specific S-T and/or T wave changes in the electrocardiogram were associated with three times the risk of developing coronary heart disease. Individuals with the combination of a blood pressure of 160/95 mm. Hg and non-specific T wave changes exhibited an augmented susceptibility to coronary heart disease, the risk being four times that of the whole population."

U.S. National Center for Health Statistics, *Weight at Birth and Survival of the Newborn, by Geographic Divisions and Urban and Rural Areas, United States, Early 1950*, pp. 33, Public Health Service Publication No. 1,000, Series 21, No. 4, Washington, July, 1965, and *Weight at Birth and Cause of Death in the Neonatal Period, United States, Early* 1950, pp. 77, Public Health Service Publication No. 1,000, Series 21, No. 6, Washington, July, 1965.

"Matched birth and death records for infants born during the first quarter of 1950 who died within 28 days after birth were used to obtain the mortality data shown" in these reports. The data are shown by race, sex, period of gestation, plurality of birth, attendant at birth, age, and cause of death. The problems of registration completeness, classification, seasonality, distribution of not-stated birth weights and gestation ages, chance variation, and interpretation of cause of death data are discussed.

"Mortality declined sharply with relatively small increases in weight until well past the prematurity weight level (2,500 grams) with the optimum weight for survival falling at 3,501–4,000 grams. Marked increase in weight beyond this point was an important liability. At almost all of the mature weights, the risk among nonwhite births was considerably higher. Mortality among plural births was below that among single births at weights between 1,001 and 3,000 grams but higher at weights above 3,000 grams. At all but the very high and very low weights, the mortality risk was far greater for male births than for female. Generally, the heavier babies at each gestation age level fared better than the lighter ones, and similarly among children falling in the same weight group, those at gestations at or near term had the most favorable mortality experience.

"Over two-thirds of the deaths in the first year occur in the neonatal period, and mortality in those 4 weeks is higher than in any single year of age after the first and up through age 60. Close to half of the deaths during the first 28 days of life occurred before the end of the first day. The problem of mortality among the newborn is concentrated principally among immature births. Neonatal deaths among these infants account for over two-thirds of the total." The principal causes of death reported were immaturity unqualified, postnatal asphyxia and atelectasis, birth injuries, and congenital malformations, their ranking varying by birth-weight group.

K. Black, Jr., J. C. Keir, and S. Surrey, *Cases in Life Insurance*, pp. viii, 281, Richard D. Irwin, Inc., Homewood, Illinois, 1965.

The cases in this volume were selected for the use of business-school students in life insurance. They are management-oriented, in that they emphasize the recognition, evaluation, and solution of typical problems in the life insurance business. Most of the 23 cases involve everyday management decisions.

Health Insurance

U.S. National Center for Health Statistics, *Personal Health Expenses: Distribution of Persons by Amount and Type of Expense, United States*, July–December, 1962, pp. 42, Public Health Service Publication No. 1,000, Series 10, No. 22, Washington, September, 1965.

"In this report statistics are presented on the proportions of persons in the civilian, noninstitutional population with no personal health expense and those with expenditures during the year prior to interview by interval and type of expense. The findings are based on data collected by self-enumeration—a mail-in questionnaire was left with the respondent for the health interviews conducted during July–December, 1962.

"Information on personal health expenditures by interval and type of expense is distributed by age, sex, family income, and education of the head of the family. In general, the proportion of females with expense exceeds that of males in each category. Also, as age increased, a greater percentage of persons had expense, and there was a shift toward larger amounts per year. Similarly, as family income increased, the proportion of persons with no expense declined, and there was a shift toward higher expenditures. As educational level of the head of the family rose, this pattern also occurred."

The accompanying table is abstracted from the report.

PER CENT OF PERSONS IN SPECIFIED SEX AND AGE CATEGORIES WITH NO HEALTH EXPENDITURES AND WITH EXPENDITURES OF $250 AND OVER, ACCORDING TO TYPE OF HEALTH SERVICE, REPORTED ON AN ANNUAL BASIS: UNITED STATES, JULY–DECEMBER, 1962

Sex and Age (Years)	Hospital		Doctor		Medicine		Dental	
	Persons with No Expense	Persons Spending $250 or More	Persons with No Expense	Persons Spending $250 or More	Persons with No Expense	Persons Spending $250 or More	Persons with No Expense	Persons Spending $250 or More
Males: All Ages	90.0	2.9	42.1	2.8	35.6	0.8	63.4	1.3
Under 6	86.5	1.1	29.8	1.0	27.9	0.2	89.5	*
6–16	92.4	1.0	44.0	0.9	42.6	0.2	53.5	0.9
17–24	91.7	1.8	48.3	1.5	45.7	0.3	57.5	1.2
25–44	91.9	2.8	45.8	2.7	36.0	0.7	56.0	1.4
45–64	88.3	5.3	42.2	5.5	31.9	1.9	62.5	2.3
65 and over	85.5	6.7	39.5	6.0	25.9	2.8	76.5	1.1
Females: All Ages	85.9	4.1	35.6	4.1	29.9	1.3	60.1	1.6
Under 6	90.7	1.0	30.6	0.9	28.9	0.2	90.0	*
6–16	94.2	0.9	45.8	0.8	42.2	0.1	50.4	1.4
17–24	76.5	4.3	31.8	5.1	31.7	0.3	48.8	1.2
25–44	79.9	5.9	32.3	6.1	26.2	1.0	50.9	2.1
45–64	86.6	6.0	34.2	6.0	25.4	2.5	59.1	2.3
65 and over	86.5	6.1	35.9	5.7	22.7	4.0	78.7	1.6

* Figure does not meet standards of reliability or precision.

U.S. National Center for Health Statistics, *Persons Hospitalized by Number of Hospital Episodes and Days in a Year, United States, July 1960–June 1962*, pp. 42, Public Health Service Publication No. 1,000, Series 10, No. 20, Washington, June, 1965.

The data for hospitalized persons contained in this report were derived from household interviews. Detailed tables present number of episodes and number of hospital days by living arrangement, geographic region, sex, age, color, and family income.

"The report shows that approximately 16.5 million persons, or about 1 in 11 persons, had one or more hospital episodes during an average year. About 86 percent of this number had 1 episode; 11 percent, 2 episodes; and 3 percent, 3 or more episodes. The rate of multiple episodes was highest among persons in older age groups, those with low family income, and those who were living alone or with nonrelatives.

"Days of hospitalization during the year, which averaged about 10 days per person hospitalized, also increased with advancing age. Children averaged about 7 days during a year, while persons 65 years and over who were hospitalized had about 17 days of hospital stay during the year. A single episode of 1–7 days was the most common pattern of hospital stay and was experienced by 64 percent of the hospitalized persons."

U.S. National Center for Health Statistics, *Hospitalization in the Last Year of Life, United States, 1961*, pp. 46, Public Health Service Publication No. 1,000, Series 22, No. 1, Washington, September, 1965.

"The report deals with statistics on decedents showing whether or not hospital or institutional care was received in the last year of life in short-stay hospitals or in resident institutions and the differences in the likelihood of care associated with age, sex, color, residence, and cause of death."

U.S. National Center for Health Statistics, *Volume of Physician Visits by Place of Visit and Type of Service, United States, July, 1963—June, 1964*, pp. 43, Public Health Service Publication No. 1,000, Series 10, No. 18, Washington, June, 1965, and *Physician Visits, Interval of Visits and Children's Routine Checkup, United States, July, 1963—June, 1964*, pp. 58, Public Health Service Publication No. 1,000, Series 10, No. 19, Washington, June, 1965.

The first report includes data by age, sex, education of head of family, type of residential area, geographic region, color, family income, marital status, and degree of chronic activity limitation. The second report presents data on the number and percentage of persons under 17 years of age who had a routine physical examination in the year prior to interview according to demographic, social, and economic characteristics similar to the first report.

U.S. National Center for Health Statistics, *Volume of Dental Visits, United States, July, 1963—June, 1964*, pp. 55, Public Health Service Publication No. 1,000, Series 10, No. 23, Washington, October, 1965.

This report presents statistics on the volume of dental visits made by the civilian, noninstitutional population of the United States and updates an earlier report. The number of visits is distributed by type of dental service and selected residential and demographic variables such as age, sex, population density, geographic region, family income, color, education of the head of family, and marital status. There were 1.6 dental visits per person per year, the average being 1.4 for males and 1.7 for females. The frequency of visit is at a maximum for ages 15–24.

U.S. National Center for Health Statistics, *Institutions for the Aged and Chronically Ill, United States, April–June, 1963*, pp. 46, Public Health Service Publication No. 1,000, Series 12, No. 1, Washington, July, 1965.

"Institutions for the aged in the United States are described in terms of their admission policies, type of nurse in charge of nursing care, whether or not round-the-clock nursing service is provided, and the amount charged for care of residents."

About two-thirds of the institutions admit bedfast patients, nearly four-fifths had a nurse or nurse's aide on duty 24 hours per day, and a little more than nine-tenths of them accepted welfare patients, but only one-fourth admitted mentally ill patients.

The accompanying table of charges by region and type of service is reproduced from the report.

AVERAGE LOWEST, MOST FREQUENT, AND HIGHEST CHARGES PER RESIDENT PER MONTH, BY GEOGRAPHIC REGION AND PRIMARY TYPE OF SERVICE: UNITED STATES, APRIL–JUNE, 1963

Region and Primary Type of Service	Average Charge per Resident per Month (in Dollars)		
	Lowest	Most Frequent	Highest
All regions:			
All types	138	170	220
Nursing care	169	206	271
Personal care with nursing	116	147	189
Personal care	99	117	146
Northeast:			
All types	160	196	252
Nursing care	200	238	314
Personal care with nursing	131	169	204
Personal care	90	116	145
North Central:			
All types	121	151	195
Nursing care	142	180	231
Personal care with nursing	106	134	182
Personal care	102	113	140
South:			
All types	115	143	186
Nursing care	134	167	220
Personal care with nursing	101	127	159
Personal care	96	115	154
West:			
All types	175	208	273
Nursing care	213	252	339
Personal care with nursing	152	187	243
Personal care	116	131	151

U.S. National Center for Health Statistics, *Characteristics of Residents in Institutions for the Aged and Chronically Ill, United States, April–June, 1963*, pp. 53, Public Health Service Publication No. 1,000, Series 12, No. 2, Washington, September, 1965.

"Based on a probability sample of about 37,000 residents of institutions such as nursing homes, homes for the aged, and hospitals which specialize in the long-term care of the aged or chronically ill," this report presents for the first time national information about their health and related characteristics.

"Approximately 70 percent of the residents in the nursing and personal care homes for the aged were at least 75 years of age" and 66 per cent were women. "Patients in the geriatric and chronic disease hospitals were primarily elderly persons, but, on the average, they were younger than the residents in nursing homes;" 54 per cent were men. "The average duration of stay of residents in these homes as well as the 'hospitals,' from the date of last admission to the institution to the date of the survey, was 3 years."

U.S. National Center for Health Statistics, *Selected Characteristics by Occupation, United States, July, 1961—June, 1963*, pp. 79, Public Health Service Publication No. 1,000, Series 10, No. 21, Washington, August, 1965.

The report presents data on disability, illness, and the use of medical services for persons 17 years and over in the labor force according to occupation. "The rate of chronic limitation was lowest among white-collar workers and became progressively higher among blue-collar, service, and farm workers. In the four major occupational categories 84.5 percent of the white-collar workers had hospital insurance coverage, as compared to 76.6 percent of the blue-collar workers, 64.8 percent of the service workers, and 42.0 percent of farm workers."

U.S. National Center for Health Statistics, *Coronary Heart Disease in Adults, United States, 1960–1962*, pp. 46, Public Health Service Publication No. 1,000, Series 11, No. 10, Washington, September, 1965.[1]

"Coronary heart disease is rare among young adults in the United States but becomes increasingly common at older ages. The highest prevalence rate is in the age group 65–74 years." It is more prevalent and more likely to be severe in men than in women, and there is little difference by race. Some pertinent data are presented in the accompanying table.

The prevalence of coronary heart disease is also examined with respect to family income, education, place description, marital status, usual activity status, occupation, and industry.

PREVALENCE OF DEFINITE AND SUSPECT CORONARY HEART DISEASE AND ITS MAJOR MANIFESTATIONS IN ADULTS, BY AGE, SEX, AND RACE, UNITED STATES, 1960–1962

Diagnosis	Age (Years)*							
	18–79	18–24	25–34	35–44	45–54	55–64	65–74	75–79
Coronary heart disease:								
Total:								
Both Sexes	5.0	....	0.4	1.6	5.5	11.9	15.4	12.4
Males	5.8	....	0.4	2.3	6.9	14.1	16.8	13.0
White	5.9	....	0.1	2.2	6.6	14.4	17.3	14.0
Negro	6.3	....	3.1	3.5	10.2	13.4	10.9	....
Females	4.2	....	0.3	1.0	4.1	9.9	14.3	11.9
White	4.3	....	0.4	0.9	3.7	10.0	14.4	13.5
Negro	4.2	....	....	1.9	8.0	9.8	14.2	....
Definite:								
Both Sexes	2.8	....	0.3	0.7	2.5	7.1	9.5	6.8
Males	3.7	....	0.4	1.1	3.5	9.7	11.6	9.1
White	3.8	....	0.1	1.2	3.0	10.3	12.2	9.8
Negro	3.2	....	3.1	....	7.4	5.7	3.4	....
Females	2.0	....	0.2	0.5	1.6	4.7	7.9	4.5
White	2.1	....	0.2	0.4	1.3	4.7	8.2	5.1
Negro	2.0	....	....	1.0	3.9	5.5	5.1	....
Suspect:								
Both Sexes	2.2	....	0.1	0.9	3.0	4.8	5.9	5.7
Males	2.2	....	....	1.3	3.4	4.4	5.3	3.8
White	2.1	....	....	1.0	3.5	4.2	5.1	4.1
Negro	3.1	....	....	3.5	2.8	7.7	7.5	....
Females	2.2	....	0.2	0.5	2.5	5.2	6.4	7.5
White	2.2	....	0.2	0.5	2.4	5.3	6.2	8.5
Negro	2.2	....	....	0.9	4.1	4.3	9.0	....
Myocardial infarction:								
Both Sexes	1.3	....	0.2	0.5	1.1	3.0	4.4	2.6
Males	1.9	....	0.3	0.7	1.9	4.3	6.3	5.2
Females	0.7	....	0.2	0.2	0.3	1.8	2.9	....
Angina pectoris:								
Definite:								
Both Sexes	1.4	....	0.1	0.1	1.3	3.8	4.9	3.6
Males	1.6	....	0.1	....	1.4	5.0	5.3	2.8
Females	1.2	....	....	0.1	1.3	2.7	4.5	4.5
Suspect:								
Both Sexes	2.1	....	0.1	0.9	3.0	4.6	5.7	5.7
Males	2.2	....	....	1.3	3.4	4.4	5.3	3.8
Females	2.1	....	0.2	0.5	2.5	4.8	6.0	7.5

* Rates per 100 adults.

[1] A corresponding report on heart disease is cited in *TSA*, XVI, 491.

U.S. National Center for Health Statistics, *Findings on the Serologic Test for Syphilis in Adults, United States, 1960–1962*, pp. 31, Public Health Service Publication No. 1,000, Series 11, No. 9, Washington, June, 1965.

This is another in the series of reports obtained from the first cycle of the Health Examination Survey, which is based upon a small probability sample of adults at ages 18–79 years. The report presents serologic findings according to age, sex, race, family income, education, area, marital status, and occupation and compares its results with findings obtained in other surveys. Serologic evidence of syphilis was tested by use of Kolmer Reiter Protein (KRP) and Venereal Disease Research Laboratory (VDRL) methods. It was found that the prevalence of positive findings rises with age, is higher for men than women and for Negroes than whites, and is highest in the West and lowest in the Northeast.

U.S. National Center for Health Statistics, *Cooperation in Health Examination Surveys*, pp. 38, Public Health Service Publication No. 1,000, Series 2, No. 9, Washington, July, 1965.

"To obtain certain information on how people in the United States feel about participating in a health examination survey, a special 'supplement' question was added in January 1958 to the questionnaire which was regularly used for the health household interview survey." The replies indicated that 71 per cent of the noninstitutional population 18 years and over may be willing to come to a health examination if the time and place are convenient, 25 per cent would not come in, while 4 per cent were in the "don't know" category. The results varied by demographic characteristic and health status of the individual.

Social Security

D. S. Gerig and R. J. Myers, "Canada Pension Plan of 1965," *Social Security Bulletin*, November, 1965.

An extensive analysis is given of the coverage, benefit, and financing provisions of the Canada Pension Plan, as well as its relationships with the previously existing Old Age Security program (which was also significantly modified). At the same time, pertinent comparisons are made with the corresponding provisions of the OASDI system, pointing out both the considerable similarities and the significant differences, including tables comparing benefit levels. A brief analysis is also made of the actuarial cost estimates, from both a short-range and long-range viewpoint.

R. J. Myers, *Old-Age, Survivors, Disability, and Health Insurance Provisions: Legislative History, 1935–65*, pp. 2, July, 1965, Social Security Administration, Washington.

This accordion-fold pamphlet summarizes the changes made in each of the major coverage, benefit, and financing provisions of the OASDI program in each of the legislative enactments from 1935 to 1965 and also shows the provisions of the new health insurance programs.

R. J. Myers and B. Oppal, *Studies on the Relationship of Contributions to Benefits in Old-Age Benefit Awards*, Actuarial Note No. 20, pp. 5, Social Security Administration, Washington, June, 1965.

This note presents the results of a small sample study of recent old-age-benefit awards in which the present value of future benefits was compared with the accumulated value of the worker contributions. In the aggregate, the accumulated amount of the worker contributions represented 7.7 per cent of the present value of future benefits for the sample drawn from awards in September, 1962.

A study along these lines is also made for illustrative future cases of individuals with maximum creditable earnings and varying years of retirement and marital status. For the ultimate condition of retirement in the year 2010, under the provisions of the law as it was before the 1965 Amendments, the ratios of the value of employee contributions to the value of benefits (based on 3 per cent interest) are shown as 133 per cent for a single male, 79 per cent for a married male, and 116 per cent for a single female.

M. Hart, *Maximum Benefits under the Social Security Amendments of 1965*, Actuarial Note No. 21, pp. 4, Social Security Administration, Washington, October, 1965.

This note deals with the matter of how the increased earnings base of $6,600 under the 1965 Amendments affects benefit payments for those at or above the maximum earnings in both past years and future years. For a person retiring at age 65, the maximum primary insurance amount of $168 is not possible until the year 2001 for women and 2004 for men. However, men who work beyond age 65 and women who work beyond age 62 can attain this maximum much earlier; in fact, as early as 1971 for a man who is aged 69 or over in 1965 or a woman aged 66 or over in 1965. Also given are certain analyses of the new maximum family benefit provisions, which are on a different underlying basis than they were in previous law, since they tend to be earnings-related at all earnings levels.

G. Hutchinson and T. Hawkes, *OASDI Benefit Increases Resulting from the Conversion of Monthly Rates under the 1965 Amendments*, Actuarial Note No. 23, pp. 3, Social Security Administration, Washington, December, 1965.

This note analyzes the effect of the various benefit changes in the 1965 Amendments on the benefits that were in current-payment status at the end of August, 1965. The major factor involved was the 7 per cent across-the-board increase, but also effective was the 10 per cent increase in the minimum benefit and the new basis of the maximum family benefit provisions. An additional effect results from the fact that actuarially reduced benefits were raised by the 7 per cent increase on the basis of the beneficiary's current rather than his initial age. The net effect is shown for various beneficiary categories separately, and the average increase ranges from 7.1 per cent for disabled workers, 7.3 per cent for widows, and 7.5 per cent for retired workers to about 9½ per cent for young-survivor beneficiaries. The average incrase for all beneficiaries combined was 7.7 per cent.

R. J. Myers, *Quarterly Distribution of OASDI Contributions within a Calendar Year, Particularly when a Change in Financing Is Made*, Actuarial Note No. 19, pp. 2, Social Security Administration, Washington, June, 1965.

This note analyzes the distribution of OASDI contributions within each of the four calendar quarters of the year, showing the effect of an increase in the tax rate compared to the effect of a change in the earnings base.

F. Bayo and M. P. Glanz, *Mortality Experience of Workers Entitled to Old-Age Benefits under OASDI 1941-1961*, Actuarial Study No. 60, pp. 35, Division of the Actuary, Social Security Administration, Washington, August, 1965.

This study, which reports on the mortality experience of the retired workers under OASDI, also presents further data pertinent to the analysis of the general mortality trends at the older ages in the United States.

The death rates for 1959–61 were graduated by fitting Gompertz curves to the data from ages over 72 for males and 70 for females. Data for younger ages were not used because of the nonhomogeneity due to the retirement test which is in effect below age 72.

The observation period was the calendar years from 1941 to 1961, inclusive. A table of ratios of actual to expected deaths for the 21 years confirms trends noted in other studies that death rates for older persons have been declining in recent years at much lower rates and are possibly rising at ages over 80.

OTHER TOPICS

J. L. Athearn, *General Insurance Agency Management*, pp. xiii, 398, Richard D. Irwin, Inc., Homewood, Illinois, 1965.

This book is intended to provide a consolidated source of agency-management information for the use of those who have experience in the insurance business, as well as those who do not. It is also a handy reference guide for those who work in an insurance agency. References with regard to the sources of additional information are included in the text or in footnotes. An index provides convenient access to a wide variety of topics.

U.S. National Center for Health Statistics, *Fertility Measurement: A Report of the United States National Committee on Vital and Health Statistics*, pp. 26, Public Health Service Publication No. 1,000, Series 4, No. 1, Washington, September, 1965.

The objectives of this study were, in general, "To determine whether a change in fertility is developing and whether currently published measures are adequate to reflect changes in fertility; to recommend needed improvement or alternative series with a view to providing the best feasible measures of current trends of fertility in the United States; to give attention to measures that might have some value for projections into the future; and to recommend research that may be needed to develop such measures."

It was concluded that a change in fertility has been developing in the United States and that currently published measures are adequate but require improvement and refinement. Recommendations were made for more research in the area of fertility projections and where data are absent or scarce, and it was found desirable to communicate information on fertility developments to the public.

U.S. National Center for Health Statistics, *Methodological Aspects of a Hearing Ability Interview Survey*, pp. 19, Public Health Service Publication No. 1,000, Series 2, No. 12, Washington, October, 1965.

This is a report on the development of a scale to measure the degree of hearing loss, in functional terms, in an interview survey. "Results of the use of the scale in several samples of persons are given. Evidence of the logic of the scale, factors affecting an individual's ability to respond to the scale logically, and the relationship of responses to the scale to other measures of hearing loss, including audiometric examinations, are discussed."