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BOOK REVIEWS AND NOTICES*

*Thomas P. Bleakney, F.S.A., *Retirement Systems for Public Employees,* pp. xvii, 205, published for the Pension Research Council, Wharton School of the University of Pennsylvania, by Richard D. Irwin, Inc., Homewood, Ill., and Irwin-Dorsey, Ltd., Georgetown, Ontario, Canada, November, 1972, $6.75.

This book assumes considerable importance in the literature dealing with pension subjects because it speaks authoritatively about a major segment of the pension field concerning which very little has been written. The book gives the reader a satisfied feeling that the author's conclusions are based upon analysis of a large number of public employee retirement systems, but in very few places in the book is there any solid statistical information. The author relies on such familiar terms as "nearly," "many," "commonly," "frequently," "most," "often," "sometimes," and the like. This is a natural consequence of the fact that the study was "essentially conceptual in nature, not designed to present a detailed quantitative profile of public employee retirement systems as they exist today in the United States and Canada."

Public employee retirement systems are an important part of the total economic security structure of the nation. As noted in the Foreword, "Mr. Bleakney examined with a critical eye the environment in which public employee retirement systems operate and called attention to the prevailing concepts, practices and influences that will have a bearing on how these plans will fulfill their assigned mission and at what cost to the taxpayers." The reader is made aware of some major deficiencies in the design and operation of such systems, as an integral part of the author's discussion of generally accepted characteristics of good design and operation.

In the words of the Foreword, "the book is written at a level and with a focus designed to further the understanding of public employee retirement systems by legislators and others responsible for their proper functioning." The reviewer speculates that it was this focus that dictated that the book be short, in order that it not appear ponderous and scare away the very audience to which it was directed. In this connection, the author has introduced into the Preface a guide to the reader which will permit an even more rapid assimilation of the author's main points. The reader with only a limited interest may read the Prologue and Chapter 1, which is an overview; the final chapter, which is a summation; and the introductory remarks in each of the intervening chapters. Such an approach does, in fact, give a very good summary of the author's main thesis, and the introductory comments in the individual chap-

* 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*.

ters are well enough written that they may well trap the reader into reading further into individual chapters.

The book is designed to stand by itself without requiring that the reader have a prior knowledge of pension matters. Therefore, it is necessary for the author to develop all the basic concepts of plan design, actuarial costs, funding, and the importance of investment quality and performance, as well as to comment on those matters which are peculiarly of interest and importance to persons particularly interested in public systems. This places a heavy burden on so small a book. This reviewer lacks confidence that the average reader will fully appreciate the significance of some of the carefully phrased sentences which imply more than is stated directly.

Actuaries reading the book may be shaken a bit by the author's views with reference to the part that actuaries play in the picture. For example, Chapter 5, "Financing—Paying the Cost," opens with the following paragraph:

> Measurement of costs is usually the responsibility of an accountant. The measurement of pension costs poses special problems, owing both to the complexity of the issues involved and to the necessity for employing another professional skill, that of an actuary, in arriving at meaningful results. Despite these problems, the accounting profession has developed measurement principles which accountants have applied throughout the private sector. In general, the use of these principles has led to a recognition, during the working lifetimes of the employees, of the cost of providing them pensions after retirement.

Somewhat later, in talking about the technical staff, the author goes on to say that "the actuary is the hydraulic engineer who compares the flow of funds into the fiscal reservoir with the anticipated outflow to pensioners." The paragraph then goes on to give a good picture of what the actuary actually does, but nowhere does the book make a straightforward statement of the importance of a professional actuarial analysis of costs and funding to protect the interests of those who pay for the system and those who benefit from it.

Considering the expected readership, the author does a particularly fine job of discussing the actuarial aspects and the investment aspects. On the somewhat controversial question of whether the largest statewide pension plans should be fully funded, the author comes down on the side of full funding and points out that "there is no unanimity of expert opinion that the present way of paying for federal programs is right." However, the reader will be disappointed if he searches this book for a discussion of what it would mean to have all the public systems competing in the investment markets for bonds, stocks, and mortgages.

The book consistently takes a calm, dispassionate, academic view of this category of pension plans that exist in a pragmatic, political, and sometimes volatile environment. This reviewer's only major criticism has nothing to do with the quality of the text but rather questions whether some of the subtleties of closely written sentences will be too sophisticated to communicate adequately to the intended reader. To take only a single example, admittedly out of context, will a member of the legislature who seeks information about public employee retirement systems understand the implications of the following sentence: "As the contingencies assumed prove to be more adverse than the assumptions, costs will climb and the extra burden will be passed on to future taxpayers"?

J. DARRISON SILLESKY

William M. Mercer and Laurence E. Coward, *Canadian Handbook of Pension and Welfare Plans*, pp. 403, CCH Canadian Limited, 6 Garamond Ct., Don Mills 403, Ontario, Canada, 1972, $12.00.

This is the fourth edition of the *Canadian Handbook of Pension and Welfare Plans*. The new edition is a fully updated and rewritten replacement of the third (1967) edition. The last two editions have been rewritten by Laurence E. Coward, F.I.A., executive vice-president of William Mercer, Ltd., Toronto. The *Handbook* is intended to complement the *Canadian Employment Benefits and Pension Guide*, also published by CCH Canadian, Ltd.

The first 260 pages consist of text covering, in twenty chapters, pension plans; registered retirement savings plans; group life insurance and accidental death and dismemberment insurance; profit-sharing, stock option, and thrift plans; deferred compensation; disability income programs; provincial hospital and medical insurance plans and private medical, dental, drug, and hospital plans; supplemental unemployment plans; workmen's compensation; old age security and the Canada Pension Plan; unemployment insurance and pension benefits legislation. The treatment is factual for the most part, with sufficient reference to applicable legislation to facilitate further in-depth research on any of the particular topics.

The appendixes include Canadian life tables and interest tables and the life expectancy tables used for income tax purposes. The full texts of the Department of National Revenue information circulars on "Employees Pension Plans" (72-13), "Supplemental Unemployment Benefit Plans" (72-5) and "Registered Retirement Savings Plans" (71-16) are included. The final two appendixes consist of the full text of the Ontario Pension Benefits Act and Current Regulations and the Quebec Supplemental Pension Plans Act and Regulations.

The *Canadian Handbook* is rather a "mixed bag." On the one hand, the twenty general chapters provide an elementary description of a whole broad range of topics. On the other hand, some of the commentary is sufficiently sophisticated that its significance may be appreciated only by experts in the field. By assembling, in the appendixes, all the up-to-date information circulars, acts, and regulations, the *Handbook* will prove to be a convenient starting source for the employee benefits practitioner. Unfortunately, with changes coming as rapidly as they have in recent years, it is almost impossible to rely on a text of this nature for the latest in the law. The extreme convenience of having all this material in a single handbook, however, suggests that more frequent updates might be desirable.

The general level of editorial content is quite high. The treatment is scholarly and thorough. As a reference book, the *Canadian Handbook* should serve as a useful compendium of fact, practice, and legislative requirement for actuaries, consultants, and employers alike. It is too bad that we do not have a similar handbook in the United States.

PAUL H. JACKSON

Joseph J. Melone and Everett T. Allen, Jr., *Pension Planning* (rev. ed.), pp. 432, Richard D. Irwin, Inc., Homewood, Ill., 1972, $13.25.

This general text on pensions and other deferred compensation programs in the United States, first issued in 1966, has now been revised. The principal area of revision has been an updating to early 1972 of the many references to tax rulings and government forms and a rewriting of the text to fit the new regulatory practices. Recent developments in pension plan technology are also introduced, such as *Accounting Principles Board Opinion No. 8*, master and prototype plans, integration of benefits with "covered compensation," group pension investment-only contracts, and "target" plans.

Many pages are allocated to practices under individual policy plans and other insured plans of all kinds, as may be justified by the text's stated emphasis on plans for small and medium-sized groups. This emphasis away from large plans probably also accounts for the brief coverage of collectively bargained plans, offset plans, early retirement, social security, trusteed plans, asset valuation, and investment concepts.

The earlier edition (reviewed in *TSA*, Vol. XIX) contained sixteen chapters, which covered the background and development of pension plans generally; the benefit, cost, and tax considerations underlying plan design; characteristics and uses of the various funding instruments available; administrative aspects of pension plans and contracts; profit-sharing and nonqualified deferred compensation programs; the self-employed and tax-sheltered markets; and the income, estate, and gift tax rules applying to qualified and nonqualified plans. The chapters on group pensions and on deferred compensation plans have now been tightened up extensively, and three new chapters have been added: (1) A chapter entitled "Inflation and Pension Planning" touches on several ways to design benefits to allow for preretirement inflation; however, as possible solutions to the problem of postretirement inflation, it describes only variable annuities and automatic cost-of-living escalators, ignoring the widely used method of periodic updating on a nonautomatic basis. (2) "Survivor's Income Benefits" discusses how one might design an entire plan which avoids certain disadvantages of group life insurance and other lump-sum death benefits. Little attention is given to the types of survivor benefits commonly found as ancillary features in pension plans today. (3) "Thrift and

Savings Plans" gives an excellent general briefing on this increasingly popular form of benefit program.

The authors are an insurance company sales executive and an attorney engaged in employee benefits consulting. They have achieved considerable balance and objectivity without avoiding such controversial areas as the size of group for which the various insured products are considered appropriate (noting that there may be disagreement on this point within a given insurance company), the possible misuse of actuarial cost estimates in competition, and how far one might go in covering salaried-only groups or in using salary reduction agreements. However, after discussion of the long-range cost implications of fully trusteed plans, the following statement appears: "Dividend and experience rating formulas (in the absence of pooling techniques) will ultimately cause the same result to emerge under most group pension contracts." This statement will be true if the insurer accounts for all reserves after discontinuance of the group contract and thus ultimately pays out the entire experience fund as benefits, expenses, and dividends. Apparently the common lack of such favorable treatment by insurers is regarded by the authors as a pooling technique which does not require further discussion vis-à-vis trusteed plans. On a lesser point, the arguments presented for the use of much lower guaranteed issue maximums under individual policy plans than under group term life plans of the same size were not convincing.

Students in the Chartered Life Underwriters program and elsewhere will find *Pension Planning* to be a highly practical, accurate, and readable text. Along with many principles which may change slowly if at all, this book presents numerous discussions, examples, and citations describing the state of the art of plan design, administration, taxation, and regulation in 1972. The text should find its greatest value as an educational tool for practitioners currently entering the world of pensions from the insurance company side.

RICHARD G. SCHREITMUELLER

Flexibility of Retirement Age, pp. 224, OECD Publication Center, Suite 1207. 1750 Pennsylvania Avenue, N.W., Washington, D.C. 20006, 1970, $4.50.

This series of studies was sponsored by the Manpower and Social Affairs Committee of the Organization for Economic Cooperation and Development as part of their general review of the techniques for promoting the economic utilization of older workers. Other OECD publications have focused on job retraining, redesign of existing jobs for older workers, and increased effectiveness of the employment office. This study opens with a general statement of pension systems and their impact on the potential continued employment of the aged. A second section sets forth the retirement provisions in the social security programs of the twenty-one OECD countries, with particular emphasis on the aspects relating to flexible retirement ages. A third section sets forth the prevailing patterns in the private pension systems of each of the twenty-one countries. This general material is then followed by three separate and complete studies of flexibility of retirement age in the United Kingdom, France, and the Federal Republic of Germany.

In this presentation the term "flexibility" has been used to express the notion of freedom of choice by the individual worker of the age at which he wishes to retire. Thus flexibility implies adaptability, choice, and freedom or, in the negative sense, "the absence of rigidity." Examples of the inhibiting factors reducing flexibility are (1) benefit formulas that provide for either no increase in benefit for work performed after a normal retirement age or no service credits after normal retirement age; (2) the deduction from social security benefits of all or a part of earnings; and (3) the outright prohibition of work as a condition precedent for receipt of social security benefits. The inhibiting factors are explored separately in relation to the social security programs of the various countries and to private pension plans. The studies also consider the effect on the retirement decision and the resulting statistical indexes of unemployment, the age distribution of the population, and the work needs of the older workers, such as longer vacations, shorter hours, more sedentary positions, and the like. The specific studies for the United Kingdom, France, and Germany contain numerous tables setting forth the utilization of retirement benefits at earlier ages under social insurance and private pension schemes, and the variations are shown by industry, sex, age, occupation, and calendar year.

Generally, the treatment of flexibility of retirement age is based on the assumption that it is desirable to have older active people participating in the work force rather than retiring. In the German study, for example, the arguments against flexibility of retirement age are limited to the single objection that a substantial proportion of workers may cease gainful employment at an earlier age than they otherwise would, producing an unfavorable ratio of nonactive to active persons. On the other hand, the arguments favoring flexibility are quite numerous, including a presumed increase in gross national product; free choice of consumption, including leisure; maximum utilization of talent; and lower cost of social insurance programs.

In the analysis no comment is made as to the difficulty of telling a particular worker that he must retire because he is not performing effectively. Apparently, in Germany there are laws requiring the discharge of the elderly to be limited to reasons based on personal characteristics of the individual worker rather than the mere application of some arbitrary rule. Similarly, there is no reference to the possibility of technological obsolescence, and there seems to be a general belief that, if a healthy worker wants to continue working at the older ages, he really will contribute something to society in the process. The analysis does not include the effect of the absolute dollar amount of prospective retirement income on the retirement decision, nor is there any analysis of company-forced retirement—via plant shutdown, for example—as opposed to the voluntary right elected by the individual, or for that matter, of the possibility of working on after normal retirement at the request of the company.

The pension actuary will find this study of value in assessing possible utilization of early retirement benefits, not only in the United States but also in the other twenty member countries. In addition, the study suggests that the generally accepted United States practice of automatic retirement at age 65 may well be running counter to the international trend and may require reexamination, particularly in the light of increased health and longevity of the older worker. In any case, this study presents a somewhat different aspect of many provisions included in private pension plans, along with an assessment of the typical practice in other developed countries. It is something of a "mixed bag," the studies of the three countries being quite detailed and thorough, although they would appear to have been developed independently and simply included in toto in the over-all volume. In any event, the practicing actuary will find the study interesting, provocative, stimulating, and useful.

PAUL H. JACKSON

Ralph Nader and Kate Blackwell, *You and Your Pension*, pp. 215, Grossman Publishers, New York, N.Y., 1973, $1.65.

This is a book about what is wrong with private pensions. It emphasizes the hazards to benefit fulfillment and illustrates each hazard with a shocking case of justice gone awry. Many of the "horror" stories are familiar, but some were new to this reviewer. The book is poorly organized, unevenly written, and replete with factual errors. Nevertheless, it is very readable, the reading time being about two hours.

The whole pension process is likened to a game of chance, with the odds heavily stacked against the participant. The chapter headings carry out this theme. Thus there are chapters on "Pension Stakes," "Rules of the Game," "Hedging the Bet," "Winner Take Nothing," "The Dealers," "The Payoff," "The Public Stake," "Revising the Rules," and "Your Turn to Play."

The first chapter, a brief introduction, states that the aim of the book is "to draw the attention of the millions of employees enrolled in private pension plans to the risks they take when they bet on a payoff from private pensions." The authors succeed admirably in achieving this objective. Any plan participant whose knowledge of private pensions is limited to what he finds in this book would have to be highly skeptical of any pension promises held out to him. Many of the authors' conclusions are based on the responses to a questionnaire sent out to eight hundred persons who had written to congressmen, to federal agencies, or to Nader, complaining about unfulfilled pension expectations—hardly a representative group.

The second chapter emphasizes the unlikelihood that a plan participant will ever qualify for a benefit, outlining the various circumstances that can cause the participant to lose his expected pension. The authors cite, with apparent approval, the statement of Merton Bernstein that "the losses of many provide the funds with which the payoff is made to the lucky few—just as at any honest race track."

The third chapter is a brief history of the private pension movement in the United States, with some attention to the attitudes of organized labor.

Chapter IV provides a basically accurate, and unemotional, description of how a pension plan operates, including the freezing of past-service liability. In many respects it is the best chapter in the book, but it says nothing that a pension practitioner does not already know. In one burst of originality, the authors question the appropriateness of applying the "insurance" approach to pensions, in view of the fact that everyone who survives to retirement will need financial support. They contrast a pension plan with fire insurance, which comes into play only if a fire occurs.

Chapter V talks about the lack of vesting and the unfair ways in which employers and unions may prevent long-service employees from qualifying for a pension. One of the more shocking examples is a plan that requires a terminated employee to apply for a pension twice, once within thirty days after being laid off and again within the thirty-day period preceding the applicant's sixty-fifth birthday. Another approach is to tighten up eligibility requirements *retroactively*. The authors score the general absence of any appeals mechanism within the plan, a very valid criticism in the opinion of this reviewer.

Chapter VI is one of the better chapters. It deals with the impact of job mobility on pension rights, dwelling at some length on defense-related industries. The authors question whether vesting on any scale currently being discussed can meet the problem created by labor mobility. In one of their most telling passages, they discuss the loss of benefits arising out of mass termination of employees before a plan is officially terminated, pointing to Packard and Curtis Publishing Company as examples. They call attention to the general ineffectiveness of the "partial termination" provision of IRS regulations.

"Winner Takes Nothing" is the title assigned to Chapter VII, which emphasizes the consequences of inadequate funding. The authors cite various figures as evidence of the high probability of plan termination and state that "one in every fourteen plans qualified by the Internal Revenue Service terminates," without giving any time frame of reference. Not surprisingly, they favor a program of plan termination insurance.

In Chapter VIII the authors deal with the management and mismanagement of plan assets. They criticize plans for (1) pursuing too conservative an investment policy, (2) holding too risky investments, and (3) failing to establish clear-cut investment objectives and standards. They call attention to varied examples of mismanagement and self-dealing, specific mention being made of the Barbers' Fund, the Teamsters Central States Fund, and the United Mine Workers Fund.

Chapter IX discusses the "payoff" of pension plans. Among the things in this area that the authors find objectionable are (1) the generally low level of benefits; (2) excessive pensions for executives; (3) inadequate early retirement benefits; (4) the freezing of vested benefits; (5) failure to protect benefits against the erosive effects of inflation; (6) discrimination against women, blacks, and low-paid employees generally; and (7) adjustment of private plan benefits in recognition of benefits available under social security.

In Chapter X the authors attempt to identify the public interest in private pension plans. Their major point is that only half of the employees in the private sector are covered by private pension plans, and these tend to be persons employed by the larger firms that also pay higher wages. They again conclude that women, blacks, and employees of small firms are being unfairly treated. They also criticize the general failure of pension plans to provide widows' pensions and the unwillingness of employees voluntarily to elect a survivor option. They voice concern over the concentration of economic power in the hands of pension asset managers and the unjustified use of inside information by these managers to the detriment of the investing public.

In Chapter XI the authors review existing legislative proposals for pension reform and conclude that these are all unequal to the task. They rely heavily in this section on the pronouncements of Merton Bernstein, "a leading pension expert." They argue for the individual account, money-purchase arrangement that Nader has espoused in various speeches. The description of the Nader proposal is crude and imprecise in this chapter, but Appendix C contains a detailed exposition of the proposal.

The final chapter is a plan for plan participants to become involved in pension reform. The authors list numerous government officials and agencies that have some authority over private pension plans and urge their readers to write to such persons and agencies.

While this book is completely lacking in objectivity and generalizes from the aberrational behavior of some plan sponsors, it does call attention in dramatic fashion to weaknesses and abuses in the private pension system that must be corrected. No one sensitive to social injustices can read this book and be complacent about the present state of affairs. This reviewer was turned off by the tone of the book and does not accept Nader's principal proposal for pension reform, but he does support the thesis that the system should be made more equitable and more financially responsible. Reform should take the route of mandatory funding standards, minimum vesting standards, greater disclosure of significant facts to plan participants, strengthening of fiduciary standards, and possibly plan termination insurance. If this book by Ralph Nader and Kate Blackwell helps to bring about this desirable kind of pension reform, it will have been a worthwhile endeavor.

DAN M. MCGILL*

* Dr. McGill, not a member of the Society, is chairman of the Insurance Department, Wharton School, University of Pennsylvania, and is chairman of the Pension Research Council.

Robert W. Cooper, *An Historical Analysis of the Tontine Principle*, pp. 69, S. S. Huebner Foundation for Insurance Education, University of Pennsylvania, 1972.

This is a monograph that one will find difficult to put down, not necessarily because it is interesting, which it is, but because it is readable and brief. It has a natural appeal to every actuary whose gambling instincts were aroused by studying cards and dice in order to get through the examinations. It perhaps even has an appeal to the instinct for gain that lurks in all of us.

Ever since Lorenzo Tonti proposed his scheme for the purpose of replenishing depleted French exchequers in the mid-1700's, the idea has captured people's imaginations. Mr. Cooper traces the early history of the tontine schemes through their rise and fall as instruments of national policy, particularly for France and England. It was not, however, until the mid-nineteenth century in the United States that the approach effectively and almost universally burst upon the American insurance scene.

There is an ample description of the policy provisions and the actuarial and legal aspects of the plan and an analysis of the marketing principles (and lack thereof) that characterize tontine and semitontine policies. The brief description of the "thirty years' war" in sales between the Mutual Life of New York and the Equitable makes one wish for more information. Perhaps the histories of these two companies for this period of time could be read for further background. It must have been an interesting period in American insurance development.

Finally came the Armageddon of the Armstrong investigation. Rapid and substantial surplus buildups, the lack of annual accounting, and excessive salaries and commissions were abuses that could be laid directly at the door of the deferred dividend system. High lapse rates and disappointed policyholders who saw the actual dividends paid fall short of the estimated dividends generated angry letters and, in some cases, lawsuits. But not until the Armstrong committee made its report and the New York legislature acted on it was anything done to curtail the abuses of the system. Once action was taken, however, it was immediately effective in causing the tontine-type policy to virtually vanish from the life insurance scene.

The interesting point of Mr. Cooper's monograph is that the story does not stop with a demise of tontine insurance schemes in 1906. His final chapter briefly touches on six forms of modern tontine schemes. Earlier he defined the tontine principle as a scheme "whereby those members of a specified group who survive and/or persist receive a future benefit of an unknown amount at the expense of those members who die and/or withdraw from the group." The manner in which Congress and the news media are criticizing pension plans would suggest that at least one form of modern tontine not only is with us still but is, perhaps, causing the same old types of problems so far as the participants are concerned. In an area such as this, it is perhaps too bad that the deliberate brevity of the monograph precludes a full or clear analysis of the problem and its ramifications.

Nevertheless, in my opinion, not since Thomas Costain wrote *The Tontine* has there been anything so readable on the subject. On the other hand, this is not a historical novel, so that the background of information is much more complete, albeit impersonal. The large number of footnotes is an invitation for further reading, and perhaps that is in itself a sufficient recommendation for this monograph.

C. NORMAN PEACOR

*Robert and Helen Cissell, *Mathematics of Finance* (4th ed.), pp. 446 (plus 103 pp. of tables), Houghton Mifflin Co., Boston, Mass., 1973, $10.95.

The authors have succeeded in taking what would otherwise be merely another in a long series of competently writen books on classical mathematics of finance and transforming it into a highly readable text with extensive practical applications in the real world of finance. To this end they have enlisted the aid of virtually an entire corps of actuaries, mathematicians, accountants, financial experts, and academicians of various professional interests to ensure that the book properly reflects current business practices. In this they have succeeded so admirably that the book is actually a good introduction to basic (nonmathematical) finance. To cite just a few examples of this, there are references to the money supply, the Federal Reserve System, promissory notes, money and capital markets, Treasury bills, commercial paper, certificates of deposit, bankers' acceptances, gross national product, consumer price index, inflation, capital budgeting, and corporate cash flow, and there is an entire chapter on stocks.

The authors discuss the standard topics of simple interest, bank discount, compound interest, ordinary and "other" annuities certain, amortization and sinking funds, bonds, depreciation, life annuities, and life insurance, and there is even a chapter on continuous compounding. Since this book is clearly slanted to those students of general business or other students who are interested in only an introduction to the mathematics of finance, the book presupposes no mathematics other than classical college algebra, except in the last chapter, on continuous compounding, where the calculus is utilized. Generous use is made of time diagrams which are invaluable to student understanding of complicated situations. However, I feel compelled to make two criticisms.

The first (which is not very substantive) is the same criticism that I have of other texts dealing with classical mathematics of finance, and that is their unfortunate decision not to use standard actuarial notation. For example, they use r (instead of i) to denote the rate of interest, $j_{(m)}$ (instead of $i^{(m)}$) to denote a nominal annual rate of interest compounded m times per year, and A_n to denote the present value of an annuity of n payments with periodic payment R (this could be confused with A_x, the net single premium for whole life insurance if $n = x$).

The second criticism is that the authors touch only briefly on the cases where annuity payments are made more frequently than interest is converted, and vice versa. In fact, no general formulas are given for these two very important cases, and only a few examples are considered. Because of this, the student is deprived of seeing the beautiful mathematical symmetry inherent in $_{\overline{n}|}a = (1 - v^n)/i$ and $a_{\overline{n}|}^{(m)} = (1 - v^n)/i^{(m)}$, for example. I presume that this omission had as its purpose an attempt to keep the book at a relatively simple mathematical level. However, other authors of similar texts have not hesitated to discuss the more general types of annuities in their entirety.

In summary, I would conclude that, while this book is too elementary for actuaries and actuarial students, it is an excellent introduction to the mathematics (and other aspects) of finance for the general student. Incidentally, the book also has as a companion a rather extensive instructor's manual.

RICHARD G. DRISKELL

John A. Brittain, *The Payroll Tax for Social Security*, pp. xiv, 285, Brookings Institution, Washington, D.C., 1972, $3.50.

This study examines and evaluates the economic effects of the payroll taxes that underlie the financing of the social security program (here considered as unemployment insurance and old-age, survivors, and disability insurance plus hospital insurance, the principal emphasis being on OASDI and HI combined). The examination pays little attention to the benefit structure of the program and its similarity in many respects (although by no means in all) to private employee benefit plans. Here, perhaps, is the greatest weakness of the study.

The conclusion of the study is that, ideally, the payroll tax should be eliminated completely as a source of financing for social security (whereas now it is the sole source for the permanent, ongoing parts of OASDI and HI). The study recognizes, however, that this would be difficult to do at once, because it would involve an increase in personal income tax rates of about 45 per cent to raise the general revenues necessary to replace the payroll tax. Several "entering wedges" are suggested, such as eliminating the payroll taxes on low-income persons and applying the payroll tax to all covered earnings (i.e., having no maximum taxable earnings base).

In order to proceed to his conclusion, Dr. Brittain first attempts to demolish what he believes to be certain myths about social security. First, he deals with the insurance principle under social security. This reviewer believes that he does not have an adequate conception of what this principle is in private insurance. Instead, he seems to consider insurance as involving only individual policies that, by their very nature, must be founded on individual equity. He does not consider the various group insurances, which have many of the same characteristics that social insurance has. Under the group insurances, quite properly, employees do not usually share equally (or proportionately to salary) in the employers' contributions.

Dr. Brittain states that social security should not be thought of as insurance, because the costs cannot be actuarially evaluated (since they are not related to demographic characteristics and since the provisions are subject to change by Congress), because the benefits are not vested or of a predetermined amount, because benefits are not on an individual equity basis, and because the system is compulsory.

None of these arguments seems to be valid or pertinent. The cost of the program can be actuarially evaluated in a reasonably reliable manner, just as much as can group plans of a private nature (these are just as subject to future change as is social security by legislation). Again, benefits under social security are equally on a predetermined basis with those under private pension plans. The fact that social security is compulsory has no connection with whether or not it is insurance.

Dr. Brittain seriously misinterprets (as have many others in the past) a statement about the insurance principle in social security made by the executive branch to the Supreme Court: "The OASI is in no sense a federally-administered 'insurance program' under which each worker pays 'premiums' over the years and acquires at retirement an indefeasible right." What is not realized is the very great significance of the fact that no comma is present after "insurance program." What the sentence means without a comma is that OASI is not an insurance program of the type described in the "under which" clause, although it may well be some other type of federally administered insurance program.

The study views the social security contributions as denying the poor their preference for present use of money over future use. This reviewer believes, rather, that this approach gives all covered persons the advantage of being able to do something for themselves with regard to their future economic security, so that they can be rightfully proud and feel self-reliant in receiving the benefit protection. If the argument is to be used about whether or not people prefer to spend money now instead of later, then this reviewer suspects that the vast majority of the younger and middle-aged covered persons would opt out of the system, if they had the choice, or out of any other system involving visible taxes from themselves.

Dr. Brittain's main point is that the payroll tax is regressive (and therefore bad). He bases this conclusion on the fact that the tax rate is constant for all earnings up to the maximum taxable earnings base and is then zero. As a result, for those above the base, the *average* rate decreases as earnings rise. In answer to this, it may be argued that social security is not regressive when both sides of the coin are considered—the taxes and the benefits. To look merely at the tax side is playing ostrich. It is not significant that the over-all tax rate for people earning above the taxable base is lower than for those below the base, because there are no benefit rights created above the base.

This reviewer's view of social security differs from that of Dr. Brittain. To my mind, social security is just another type of service and commodity that individuals are purchasing. The fact that they are compelled by law to make this purchase seems no more important than that they are compelled by a law of nature to consume food, which they must purchase. The price of goods and services should be the same for everybody—at least to some extent, so that people are not subject to the stigma of being second-class citizens, with government-required lower prices, and so that they can maintain their personal pride and self-reliance. If low income is the problem, solve that directly on the income side, not indirectly through one of the expenditure items.

As another point in connection with regressivity, why does not Dr. Brittain argue against the greater regressivity of prices for other goods and services? For example, the poor pay the same for a loaf of bread as do others, and yet the price expressed as a percentage of their income is much higher.

Would Dr. Brittain advocate that, in order to eliminate regressivity, all individuals should receive a card from the government showing their relative economic status and that the prices paid in stores should not be in dollars as at present but rather in units, so that a high-income person with an index of, say, 10 would pay 10 times as much for a given item as those in the lowest income brackets? Or perhaps then it would really be simpler to eliminate all salaries and make all items in stores free of direct cost!

Another question that should be answered by those who continually argue for more progressivity in the tax structure is how far they really want to go. The ultimate end for a progressive tax structure is, of course, uniform net incomes for everybody.

Another major point in the study is that not only is the payroll tax regressive, but also insult is added to injury because the employee is paying both his own tax and the employer tax. Upon this view is built much of the argument for the subsequent recommendations.

First, let us assume that the employee tax is completely allocable to the employee (even though this reviewer does not believe that this is any certainty, because, in many cases, workers and their representatives are concerned essentially only with take-home pay and will bargain on this basis). Next, let us assume that the employer tax *in the aggregate* is part of the wage bill and is therefore borne by employees as a whole (although, again, this reviewer thinks that the arguments for this viewpoint are not wholly conclusive—and, in fact, can never be proved with the mathematical certainty and precision of the computation of the value of pi).

Digressing for a moment, this reviewer believes that no precise and provable solution can ever be obtained as to the true incidence of the payroll taxes, although efforts to achieve one are intellectually challenging and stimulating. This really seems to be a matter of "going around Robin Hood's barn."

Nevertheless, the fact that the payroll tax is assignable to employees in the aggregate does not mean that it is allocable on a strict pro rata basis (according to covered earnings) to each individual directly. The answer, simply, is that payroll taxes paid by employers can really be considered to be allocated to employees individually according to the risks involved and the protection furnished. In other words, the employer taxes are allocated effectively to the lower-paid workers and to the older workers (and doubly so for the lower-paid older workers). It is not implied that this is necessarily done within the employment of each employer, because the nature of the social security system is such that nationwide pooling of the employer taxes can reasonably be presumed.

This situation tends to parallel that in private pension plans. In the vast majority of these plans (i.e., all except money-purchase plans like TIAA-CREF), the employer contributes proportionately much more for the older worker than for the younger one, even though the employer cost is generally stated as an average figure, as a percentage of his payroll. This does not mean, of course, that each worker gets benefit protection equal to that percentage or that his real pay is his actual gross pay plus that percentage.

Furthermore, employers do not look at the cost of operating each department of the firm by considering that some have a low pension cost (because of a higher proportion of young employees); rather the cost is pooled for the entire firm and thus average out the low-cost and the high-cost departments (just as in social security, the employer taxes for both low-cost and high-cost firms can be said to be pooled on a nationwide basis).

As a partial move toward elimination of the payroll tax, Dr. Brittain suggests an exemption scheme for individuals with low earnings. This is done in the name of elimination of poverty, as well as of elimination of regressive taxes.

As to the first aspect, this reviewer sees no reason for taking this poverty action on only one element of personal expenditures. In other words, if it is desired to raise the income of people at the bottom of the economic scale, this should be done directly and forthrightly on the income side, not by merely considering and acting upon one of the expenditure items. Why does not Dr. Brittain also recommend that those with low incomes should pay lower gasoline taxes or lower sales taxes or receive reductions in their grocery bills? Going further, why should they pay for any of the goods and services that they receive?

One has considerable difficulty in understanding how Dr. Brittain would completely eliminate the payroll tax and yet continue the present social security basis of earnings-related benefits. Where do the data come from to compute the benefit amounts? More importantly, why should the benefits then be earnings-related? This reviewer thinks that such a basis for benefits is very popular with the citizenry, which is glad to pay payroll taxes on higher earnings as long as there is at least some recognition thereof in the eventual benefits.

Dr. Brittain makes much of the point that people generally are incensed at increases in the income tax but are little affected by rises in the social security tax. He blames the latter lack of concern on the "insurance" fallacy, but he believes that soon people will see through this and demand the demise of payroll taxes, which they bear doubly (due to the employer tax, which is really paid by the worker). This reviewer thinks that the author underrates taxpayers and their knowledge. There is considerable wrath against the very high increases in the payroll tax that have occurred recently. Many young workers feel that they would like less payroll taxes and less potential future benefits, even though they are quite willing to have some such taxation to finance a benefit level that will provide a reasonable floor of protection, both for themselves in the future and for current beneficiaries today (under our Judeo-Christian ethics of taking care of the aged—although not necessarily providing for them a life well above the minimum subsistence standards).

An incorrect conclusion is reached by Dr. Brittain as to the effect of the automatic-adjustment provisions, in that he believes that, through them, the system will tend to generate surpluses. Apparently this view is based on the thought that taxes will be rising more rapidly than benefits. What is forgotten is that, even if benefits were not automatically adjusted by the consumer price index, they would increase as a result of the higher earnings that would be creditable as a result of an automatic adjustment in the taxable base (if such adjustment were included without having automatic adjustment of benefits, or if such adjustment occurred—as it has continuously in the past—on an ad hoc basis).

It is quite possible, and quite likely, that these two elements (increased benefits due to higher credited earnings and the excess of the increase in earnings over the rise in the CPI) will offset each other and that there will not be any surpluses generated. If wages rise much more rapidly than prices, there could be such surpluses as he discusses. If wages rise only slightly more rapidly than prices, however, there would actually be deficits, and the tax rates in the law would be too low.

In Chapter 6 the author digresses a bit to examine the question of whether people—especially young workers—get a "good buy" from the social security program. This seems an important topic to him because some economists have appraised the situation and have concluded that young workers are badly cheated, whereas other economists have come to the opposite conclusion. Dr. Brittain's answer is that they get a reasonably good buy (even considering the employer taxes as being strictly and completely allocated to each individual employee) but that low-income workers do not really need such a good buy for long-deferred benefits, when, as he says, the taxes push the poor even further into poverty.

This reviewer believes that, under realistic assumptions and reasonable methodology, it may be demonstrated that young new entrants as a group get a reasonably good buy *considering only the employee tax* (it not being proper to consider the combined employer-employee tax). The analysis made by Dr. Brittain in this area leaves much to be desired. Some of his methodology is extremely rough and approximate, and, conversely, some is overrefined.

In his calculations of the value of social security benefits, Dr. Brittain makes the simplistic assumption that both taxes and benefits are paid annually. It would have been a simple matter to assume monthly or continuous payments throughout the course of a year, without any great computational or mathematical difficulties. The fact that he did not do so certainly raises questions as to whether some of the more complex elements involved in the computations were correct. After all, doing things by electronic data processing procedures does not produce significant results if the input data and methodology are rough and approximate (or even erroneous).

Turning to the broader question of the validity and significance of the calculations of the relative values of the benefits and taxes, so many broad and sweeping assumptions were made that the conclusions reached may not be really significant or reliable. Some assumptions and methodologies move in one direction, while others move in other directions. Thus no certainty is present as to just what the results truly indicate.

This reviewer cannot, of course, make a complete appraisal of the computational procedures from the general material presented, but certain weaknesses are evident. For one thing, it is assumed that everybody retires at age 65, which produces a high value for the benefits. Even if the *average* retirement age were to decline to this level, from a cost standpoint this assumption would not be valid. Everybody who retires before age 65 has actuarial reductions in benefits that make them the equivalent of the benefits on retiring at age 65. On the other hand, everybody retiring after age 65 has a low cost because of the delay in benefit receipt.

As another point, new entrants in the mid-1960's are considered, and their taxes are taken at the current-cost rates for the next forty years. Because of the demographic structure of the system and of the population as a whole, these rates will be relatively low as compared with what will eventually be required. Accordingly, even though the combined employer-employee rate is used, the value of the taxes will be relatively low. Quite a different picture would be presented if new entrants coming into the system at the present time were considered—or, more especially, entrants ten or twenty years from now.

As still another point, the value of disability and survivor protection has been ignored, as well as that of HI protection. It could be argued that the simple approach was taken of considering only the major part of the system so far as costs are concerned. But, unknowingly, some survivor benefit cost for death prior to retirement has been included. It appears that the taxes have been accumulated solely with interest, whereas accumulation with benefit of survivorship should also have been included in dealing only with retirement benefits. In other words, what has been provided for is a death benefit of the accumulated combined employer-employee taxes with interest for death before age 65, even though no such benefit is contained in the program.

If survivorship as well as interest had been used, there would have been a larger accumulation of taxes and thus a lower ratio of value of benefits to value of taxes. This error, combined with the error in assuming retirement age 65 for everybody, moves in the direction of producing a ratio of benefits to taxes higher than is really the case. In turn, this seems to make the program a good buy for a new entrant, even though the combined employer-employee taxes are considered.

Other technical defects seem to be present in the calculation of the values of the benefits and taxes—for example, such broad averaging as is implied by measuring the mean benefit payment by the mean covered earnings in the year. These two amounts are by no means directly related and in many ways are independent of each other, so that shifts in their ratio can occur for reasons that are not significant.

The author has made a number of factual errors about the social security program. To this reviewer, this seems an indication that he did not make a sufficient study of the program to allow such sweeping conclusions as he makes. For example, it is not correct that the maximum taxable earnings base will, in the future, "move" annually. Actually, the law provides that such movement will occur only in years when benefit increases automatically occur as a result of the CPI's increasing at least 3 per cent over the previous base for it. Also, "move" implies "down" as well as "up," and the law prohibits any downward movement in the base, even if covered wages should decrease.

Then, too, there is a factual error in describing the tax basis for the self-employed. For one thing, the basis for HI has always been 50 per cent of the combined employer-employee rate, not 75 per cent. For another, the 7 per cent ceiling applies only to the OASDI tax rate, and the HI rate is in addition thereto.

Further, several factual errors are present in the description of the Medicare program. For example, the supplementary medical insurance premium rate of \$5.60 quoted is incorrect as applying "since July 1, 1971." Actually, the rate was \$5.30 for the year beginning July 1, 1971, and it is \$5.80 for the current fiscal year (both of which facts were available well in advance of publication date).

In summary, this reviewer believes that the author has made an interesting, but not convincing, presentation of his views that payroll taxes should be eliminated in the financing of the social security system and that the employer social security tax is payable specifically by the employee from whose wages it was determined.

ROBERT J. MYERS

*Sir John Walley, *Social Security—Another British Failure?* pp. 289, Charles Knight & Co., London, England, 1972, £4.50.

The author examines the main features of the British social security system, points out its weaknesses and inconsistencies, and suggests the principles on which an effective reform should be based. No one could be better qualified than Sir John Walley for the task he has set himself. After thirty years of distinguished government service, he retired as deputy secretary of the Ministry of Pension and National Insurance in 1966 and devoted the last five years to writing this book.

His mastery of the subject is evident, and his point of view is persuasive. His primary concern is with the establishment of principles to guide those in and out of government who will be involved in future developments. Matters of minor importance, special applications, and technicalities are not discussed except when they raise issues of real principle. For this reason the book should be of considerable interest and value to North American students of social security, not merely to those concerned with the British system.

The first eight chapters are historical. They trace the four-hundred-year-old origins of the British welfare state from the Elizabethan Poor Law, the harsh Victorian workhouse system, the Beveridge Report, and recent developments in graduated pensions (earnings-related) and dynamism (escalation or indexing). Many readers will be surprised at the crucial importance to social security of Winston Churchill, who receives unstinted praise for his insight.

The second and longer portion of the book deals with the arguments for and against different social security approaches. Although illustrated by reference to the British system, the arguments are of universal application and can be heartily recommended to readers in other countries. However, a summary of the present British arrangements similar to the three-page summary of social security in Britain in 1948 in Chapter VIII would have made it easier to follow some sections.

The critical issue is between contributory insurance and means-tested assistance. Should the state provide universal benefits as a right in return for specific contributions, or should it concentrate benefits on the poor and needy, financing them by general taxation? The author makes a convincing case for universal contributory plans with benefits at such a level that need-tested assistance is required only in the really exceptional case. The statutory level would not need to be impracticably high if universal children's allowances were paid, since it would then not be necessary to provide for large families.

These ideas, if applicable to other countries, suggest that the failure of the United States to adopt a family allowance system may have tended to inflate the level of OASDI benefits.

The claim that social security should be made more "selective" is severely criticized. Interestingly enough, the whole basis of the 1970 Canadian White Paper on income security is the premise that "greater emphasis should be placed on antipoverty measures. Selective payments based on income should be made where possible in place of universal payments." Sir John Walley's answer to the "selectivity fallacy" is emphatically negative. He wants to minimize the use of any type of means test, claiming that such a test is an affront to dignity, is socially divisive, and is wasteful of staff and resources—that under it injustices and anomalies are inescapable, dishonest evasion is encouraged, and the incentive to work and save is weakened. The British system is bedeviled by the fact that the contributory benefits payable as a right are below a decent level for a family, with the result that the vast majority of people not regularly employed depend on means-tested assistance. In this situation an increase in contributory benefits helps all but the poorest groups, and political pressure for undue increases in assistance is difficult to resist.

The final chapter, on the political management of social security, proposes a social security committee or comission to report to Parliament and to educate the public. The haste and secrecy with which policy was made in the past (by no more than a handful of men) has led to serious errors. The author speaks well of the work of the actuarial profession but notes that "the papers of the period [between the Wars] now show how dangerously dependent governments were on the social security ideas, as well as the financial calculations, of the first Government Actuary, Sir Alfred Watson."

Sir John Walley's outlook is broad. He discusses what the state benefits are and ought to be with respect to childhood, old age, unemployment, sickness, maternity, disability, and death. He is always conscious of the *combined* effects of social security measures and the Income Tax Act in redistributing income. He warns that the true cost and value of a plan are rarely shown solely by its budgetary consequences. He believes that revisions are needed not only to correct past mistakes but also to take account of the inflationary forces and the profound changes which are being made in the laws governing marriage, divorce, and family responsibility.

The references to specific British benefits are likely to confuse a North American actuary, who, however, would gain much from the sharp analysis of general principles and key problems in each social security area. I recommend the book to anyone seriously interested in the subject.

LAURENCE E. COWARD

*Louis S. Reed, Evelyn S. Myers, and Patricia L. Scheidemandel, *Health Insurance and Psychiatric Care: Utilization and Cost*, pp. 411, American Psychiatric Association, Washington, D.C., 1972, $6.50.

The stipulated endeavor of this book is to promote and encourage health insurance coverage for psychiatric care, and to this end the authors have assembled data on a large assortment of medical care plans. The data include fairly detailed summaries of coverage provisions under the various plans, with respect to all illnesses as well as with respect to mental illness, and in total constitute a good survey of the various types of existing medical care plans in the United States and Canada. Reports are also included on recent utilization and cost experience under most of the various plans, centered for the most part in 1968–69. Emphasis is placed on the relationship of the costs or utilization of mental care to total plan costs or utilization. Such relationships, as well as the absolute costs or utilization figures, will be of interest to actuaries involved in pricing coverage of mental illness.

A large portion of the data is covered on a dual or crisscross basis. The appendixes of the book, running some 220-odd pages, provide a summary, by plan, of the coverage provisions and utilization experience of some forty private health insurance plans or organizations, including various Blue Cross/Blue Shield plans, group plans written by two insurance companies, community group-practice plans such as the various Kaiser Foundation plans, and an assortment of others. Three chapters of the text cover roughly the same ground as the appendixes but deal respectively with coverage provisions, basic utilization data, and variation in utilization by age, sex, and other factors. An additional chapter provides data on public programs in the United States (Medicare, Medicaid, CHAMPUS) and on the Canadian provincial programs of hospital and medical insurance.

The description of coverage provisions brings out the extent to which coverage of mental illness under the various plans is on a full or nondiscriminatory basis (i.e., the same as for other illnesses) or on a more limited basis than for other illnesses. These details are brought out with respect to coverage of hospital care (distinguishing between general hospitals, private psychiatric hospitals, and public mental hospitals), hospital inpatient medical visits, and ambulatory psychiatric care. In reporting the special limitations applicable for mental illness, the authors review some of the factors, historical or other, which have led to the limitations. Of special interest is the history of coverage of ambulatory psychiatric care under major medical policies written by insurance companies, which started out without special limitations on mental coverage but were subsequently modified to restrict benefits as a result of instances of high utilization.

The data on utilization and cost vary considerably by plan. The most complete data are on the Blue Cross/Blue Shield plan covering federal employees and their dependents under the Federal Employees Health Benefits program. This plan also has the characteristics of very broad coverage as to both general and mental conditions and very large size (almost five million persons covered) and is used as the basis for much of the analysis made of utilization and cost. One of the more interesting analyses traces the experience under the plan during the period 1961–69, which generated substantial increases in utilization and cost over these years. These are indicated to have resulted in part from several plan liberalizations and in part from a general upward trend in utilization. The authors suggest that utilization of mental health care for ambulatory patients is apt to increase in the future but that utilization of hospital care may decline.

Only meager data are available on utilization of psychiatric services according to occupation, income level, and educational level. The available figures indicate low utilization for blue-collar, low-income, limited-education classes, on the one hand, and high utilization for white-collar, high-income, highly educated classes, on the other. Coupled with results of surveys of the prevalence of mental illness, which indicate a greater prevalence of mental illness among the former classes, there is implied considerable underutilization in the case of the former classes and possible overutilization in the case of the latter. In this connection, the authors are critical of the major medical type of coverage (i.e., coverage characterized by deductibles and coinsurance) as tending to produce greater insurance benefits to the affluent and better-educated segment of the covered population than to the rest. They suggest insurance coverage along the lines of the ambulatory psychiatric care coverage negotiated by the United Auto Workers in 1966, paying for the first few visits in full and for additional visits on a gradually increasing scale of coinsurance, as encouraging a better balance of utilization. The UAW plan was unusual also in the sense that it covered office visits for psychiatric care, whereas there was no corresponding coverage of office visits for other illnesses.

Apart from the above reference to the UAW plan, the authors advocate that hospital and medical care for mental conditions should generally be covered on the same basis as all other conditions, but they admit that special problems exist with respect to public mental hospitals, mentally retarded persons, and the generally more subjective nature of mental illness as compared with other illnesses. In connection with public mental hospitals, the sobering statistic is provided that the number of days of hospitalization for mental illness per 1,000, for the general population, is more than ten times the corresponding rate for insured groups which consist of active and recently retired workers and their dependents.

EDWARD J. PORTO

Robert I. Mehr and Seeve Neumann, *Inflation, Technology and Growth: Possible Long-Range Implications for Insurance*, pp. xv, 511, School of Business, Division of Research, Indiana University, 1972.

This book contains a wealth of data about the economy and the insurance business, with a projection to the year 2000. Composite expert opinion was developed, using the Delphi technique, by fifty-nine panel members, stated to be experts from the academic community, government, the insurance-buying public, the insurance press, and insurance company chief executives. The Delphi procedure, which required seven months to complete its four rounds, is explained in the first chapter, along with a scholarly discussion of alternatives and difficulties in this type of forecasting.

One might question whether background data furnished to the panel members, which "pointed to the shape of the economy in the year 2000," would not tend to condition the panel members to perpetuate any prejudices that might have been present in the projections included in such background data. However, every effort was made to remain objective, and the Delphi technique gives every panel member the opportunity to prove his point on the basis of whatever evidence he can bring to bear and to influence the other panel members accordingly.

Chapter 2, dealing with the American economy toward the year 2000, develops the expectation that future economic growth will continue at rates similar to those of the past, real gross national product averaging not less than 3 per cent annual increase.

At a time when inflation is a serious problem, some may take comfort from, but many will be skeptical of, the statements that "a period of more than moderate inflation can hardly last" and "more than 2 per cent (per year rise in prices) cannot be tolerated for a long period." Trade-offs between growth rates, price increases, and unemployment are illustrated by Professor Phillips' (London School of Economics) curve.

The authors endorse, albeit with the qualification "hopefully," W. W. Heller's statement that "bipartisan acceptance of the bulk of the 'New Economics'—of active and positive use of tax, budget, and monetary changes to maintain prosperity—has at long last moved our economy from our pre-war boom and bust and its post-war pattern of repeated recessions into a new high-employment high-growth orbit."

The description of the American economy in the year 2000 is presented to provide a frame of reference for projections pertaining to the insurance industry and is based on recent studies by two research institutions and a governmental commission. Data of several kinds are shown for the years 1965, 1975, 1985, and 2000. These include a projected United States population of 318,000,000 by the year 2000, and GNP projected, in 1965 dollars, from the 1965 figure of $681 billion to $2,177 billion in the year 2000 if the assumed annual productivity gain is 2.5 per cent, or to $3,628 billion in the year 2000 if the assumed annual productivity gain is at the rate of 4 per cent. Other potentially useful data relate to the distribution of the population by age and sex, the labor force, and unemployment.

By the year 2000, 27.2 per cent of all families are expected to attain incomes of $25,000 or more, and the mean family personal income before federal income tax is projected to increase to $20,980, all measured in 1965 dollars.

The authors next translate projected values for the years 1975, 1985, and 2000 from 1965 dollars into inflated dollars, corresponding to average annual rates of inflation ranging from 0 to 4.0 per cent in steps of 0.5 per cent. Tables reflecting such rates are presented for the consumer price index (at 109.9 in 1965), gross national product, personal consumption expenditures, and eight other significant characteristics of the economy.

No attempt is made to predict what the rate of inflation will be, except for the implication that the average will fall between 0 and 4.0 per cent per year, together with the previously mentioned endorsement of the assumption that a rise of more than 2 per cent cannot be tolerated for a long period.

Chapter 3 is an excellent review of technological advances affecting the insurance business. After a good discussion, the chapter ends with a concise listing of expected technological developments, nineteen affecting insurance in general, twenty-four affecting life and health insurance, twenty-two affecting automobile, marine, and aviation insurance, and twenty-five affecting other property-liability lines. The chapter provides relief from the heavy statistical orientation of other parts of the book and can provide stimulation and guidance to those concerned with future planning, particularly in the area of design and marketing strategy.

Chapter 4 explains the methods of presentation of the panel forecasts and elucidates the significance of confidence limits, also bringing out the manner in which the confidence of the panel members themselves was strengthened by the successive rounds of the Delphi procedure. The chapter invites attention to histograms in Appendix 4, which give graphic indication of the quality of the forecasts, especially as to degree of unanimity. It also invites attention to the forty-three tables of statistics on the insurance business for the period 1950–66 that were furnished to the panel members as background. These tables, which appear in Appendix 2, may be a convenient reference source for actuaries and others when historical data are needed.

Proceeding to presentation of the actual forecasts, for each item dealt with there is presented an appropriate statistical table, followed by general remarks and specific comments relating to the panel consensus, the confidence level, the quality of forecast, and thoughts generated by the panel.

Chapter 5, relating to the entire industry, deals with the size of the various segments of the industry, the importance of all-lines groups, the comparative importance of private and social insurance, the relative importance of group insurance, the employment picture, and the degree of concentration in the industry.

Chapter 6 presents the forecasts relating specifically to life insurance and annuities, dealing with many items: premiums as a percentage of disposable personal income; insurance in force as a percentage of disposable personal income; life insurance as a savings medium; development of the variable annuity; relative importance of annuities; the importance of credit life insurance; group life insurance; industrial life insurance; government, fraternal, savings bank, and assessment plans; new life insurance products; insured pension plans; segregated accounts in pension funding; new life insurance companies; relative uniformity of premium rates; the investments of life insurance companies; the relative importance of life insurers in the capital market; the investment earnings on life insurance funds; premium rates; efficiency of operation; relative importance of life insurance as a savings medium; substandard life insurance; mutual fund affiliates, ratio of assets to GNP, relative importance of stock and mutual life insurers; and life insurance for business purposes.

Chapter 7 presents the forecasts relating to health insurance, with a series of items comparable to those relative to life insurance in Chapter 6. Chapter 8 does the same for the property-liability insurance industry generally, Chapter 9 deals with automobile insurance, and Chapter 10 deals with property-liability lines other than automobile.

Chapter 11 recapitulates the forecasts according to panel consensus as developed in the preceding six chapters. Expectations for the year 2000 are stated in 1965 dollars. Readers can select their own assumptions as to rate of inflation between 1965, when the CPI was 109.9, and the year 2000 and then translate the figures for the year 2000 from 1965 dollars into inflated dollars for the year 2000. In suggesting the use of Table 12 (p. 45) for this purpose (Table 12 shows possible levels of the CPI in the year 2000 for assumed average annual rates of inflation ranging from 0.0 to 4.0 per cent at intervals of 0.5 per cent), the authors might have simplified things by factoring out the 1965 CPI of 109.9. Alternatively, they might have suggested the use of a thirty-five-year compound growth factor at the selected annual inflation rate. This is a small point of criticism of a chapter that should be, and for the most part is, a very convenient summary. However, the chapter is marred by errors in arithmetic and transcription which suggest that it may have been hurried.

Here are a few of the expectations listed for the year 2000: 40 per cent of all annuity considerations will be for variable annuities; private pension plans funded by life insurers will increase from 31 to 40 per cent, and the proportion in separate accounts will increase from 2 to 25 per cent; premium rates both for straight life and for convertible term policies will be down about 15 per cent; the average cost for issuing and servicing ordinary insurance will be down 12.5 per cent; an interest rate of 5.5 per cent is looked for; the proportion of life insurance company investments in stocks will increase from 5.2 to 13.5 per cent and the proportion in real estate from 2.9 to 5.0 per cent; public and private expenditures for health care, expressed as a percentage of GNP, will increase from 5.4 to 8 per cent and, of these, direct payments will constitute 40 per cent instead of 64 per cent, insurance benefits will constitute 50 per cent instead of 31 per cent, and prepayments will constitute 7 per cent instead of 4 per cent; 35 per cent of automobile insurance will be written on a group basis; and, while the ratio of private insurance premiums to GNP changes relatively little, social insurance expenditures will increase from 3.8 to 7.75 per cent of GNP.

A three-page bibliography and a three-page index add to the book's considerable value as a reference work. As a commentary on the future the book is much less disturbing than Toffler's *Future Shock*.

L. S. NORMAN

Charles H. Cissley and Jean Barnes, *EDP Systems and Applications in Life Insurance*, pp. 143, Life Office Management Association, New York, N.Y., 1972.

This little paperback text fills a long-standing need in the life insurance industry. Its primary objective is to outline a course of study for persons taking the EDP Specialty Examination of the LOMA Insurance Education Program. However, it will be of value to any life insurance workers, including actuaries, who want a brief, simple, up-to-date, and fairly complete survey (not in depth) of what is going on in the EDP departments of life insurance companies. This reviewer's over-all reaction is that the book is excellent for its purpose.

The primary audience, persons preparing for the EDP Specialty Examination, are typically persons already working in the systems analysis and programming areas of their company, and probably fairly new employees. They will have some knowledge of hardware and software (programming) but only limited knowledge of life insurance. With actuaries the situation may be reversed. Yet the book can satisfy both audiences. It contains only a few EDP "buzz words" that will irritate non-EDP-oriented personnel. Most actuaries have enough general knowledge of EDP concepts to avoid having any problems with the few technical portions of the text.

The book is only 143 pages long, and the style is simple, so a cover-to-cover reading can be done in an evening or two. However, it will be of value even to the browser who does not want to read the entire text. Although the lack of an index is a bit of annoyance, the Table of Contents shows the major subheadings in each chapter. Also, there is an Appendix designed for the LOMA student that repeats the objectives of each chapter and lists the main topics covered. It also poses various review questions that the student can ask himself in preparing for the examination. By reference to the Table of Contents and the Appendix, the browser can pick and choose the topics of most interest to himself.

The first chapter provides a very general discussion of information needs in an insurance company. It is probably too general and vague to be of much value to the actuary.

The second chapter, however, is quite interesting. It gives a brief history of data processing in life insurance. The authors illustrate the rapid changes by citing the themes of the LOMA Systems Forums conducted triennially since 1959.

Chapter 3 discusses the systems development process, probably a very important topic for the LOMA student but of limited value for actuaries. One interesting point was the authors' analogy that the development of a system is similar to the construction of an office building—it is easy to make changes when you are in the blueprint stage but very expensive after the construction is completed. How true! This reviewer also felt that too much emphasis (nine pages) was placed on the earlier steps of defining the system and conducting feasibility studies, and too little (two pages) on the steps of programming, testing, and maintaining the system.

The next chapter is on organization and is one of the best chapters in the book. It covers the place of the EDP department in the structure of the company and describes the trend toward the profit center system of charging for EDP services. It then describes the types of internal organization within the EDP department and stresses the need for liaison with the user department. Finally, it summarizes the pros and cons for centralized or decentralized EDP organizations.

Chapters 5 and 6 describe current hardware and software in a very capable manner. Although it would have helped if a couple of buzz words such as "multiprogramming" and "virtual memory" had been defined, the actuary will definitely benefit from this surface review of what equipment is now being used. Also, the discussion of how some programs can be purchased from outside vendors should be of interest. Some of the vendors are listed, probably to the distress of other vendors who were skipped. Reference should probably have been made to the recent LOMA publications (Systems Review and Procedures Reports Nos. 14 and 15) that list the various program packages available and those that are in use by major insurance companies.

One minor comment on the authors' discussion of optical character recognition devices seems in order. They state that a device costing $100,000 can be justified if it replaces from twenty-five to thirty keypunchers. Actually, if you consider that the amortization writeoff of such a device is probably less than $25,000 per year (about the salary of four keypunch operators) it seems that the break-even point must be less than the twenty-five to thirty that they quote.

The next chapter, which is on data communications, gives a simple review of a fairly new but important field in EDP. Chapters 8 and 9 describe quite well the different types of EDP applications being done in life insurance companies. These thirty-five pages are perhaps the most important for the actuary who has not remained fully abreast of what is going on in EDP.

The next chapter covers management science applications. Although this is "old hat" to most actuaries, it is an important topic for the LOMA student.

The final chapter gives a brief and restrained projection of what lies ahead in the use of EDP in life insurance work. It is a suitable conclusion for this remarkably well-done book.

JAMES J. CONNORS

Allan Chase, *Biological Imperatives,* Holt, Rinehart & Winston. New York, N.Y., 1971, $8.95.

Biologist Allan Chase grinds a few axes in this analysis of the present and future conditions of our health and health care. Writing in a style that should be understandable to laymen, he argues that the nation's health and longevity have been jeopardized by the motorized economy, insensitive industry, and the demands of the war in Vietnam. The insurance industry is also charged with placing profits above people.

He begins with the assertion that "our physical survival now demands the existence of a national system or integrated group of systems of comprehensive health care—starting with environmental health controls—that meets the demands of our present and projected biological imperatives." Then, after describing the four stages of health care as (1) prevention, (2) early detection and prompt treatment, (3) acute care, and (4) postacute, convalescent, rehabilitative, and terminal care, he discusses the problems of each.

Of particular insurance interest is his concern over possible development of automated health screening as a broad prevention technique. He claims that the margin of error of each test in multiple screens is such that, on a 16-test screen, the odds are better than even for at least one"false positive." He also fears that an industry based on such screening could use up more dollars and people than would be justified and would inundate us with data beyond our capabilities of distinguishing the medically relevant.

His discussion of biological and pharmacological research includes a history of the National Institutes of Health, which, he claims, have supported three-fourths of all biomedical research in the United States. War-related cutbacks in funds are blamed by him for seriously depleting the training of health research M.D.'s and Ph.D.'s.

Among the subjects that he covers are the effect of malnutrition during the first six years of life on mental development, the history of American medical education, the harmful side effects of improperly tested drugs, and the Rat Extermination Bill of 1967.

He gives a very interesting history of drug addiction in the United States, starting with the opium used by Chinese coolies in the 1840's. He sees the problem reaching major dimensions with the addiction after the Civil War of soldiers who were medically administered opium and morphine. This was followed by the opium-based "tonics" that were sold as pain-killers to former soldiers later in the nineteenth century.

His discussion of overpopulation includes mention of the periods of Justinian (sixth century), the Black Death (fourteenth century), and the Thirty Years' War (seventeenth century) when the Western world experienced "minus zero population growth." Today, he asserts, "overpopulation is, essentially, a poverty disease."

Chase's industrial fears are expressed as follows: "Biologically, the ever expanding American technology represents a far greater threat to humanity and to the population of this country itself than does the continually declining American birth rate." His quarrel with the insurance industry is somewhat puzzling, particularly in light of the dominance of large mutual companies: "Private insurance companies exist to make profits for their stockholders. They have never had in the past, nor should they ever be expected to develop in the future, the professional skills that would enable them to contribute a thing toward the . . . 'lowering of health care costs, the introduction of innovations in the delivery of health care, and the maintaining of the quality of health care.' Their business is not health care but insurance; their expertise is not biology and medicine but finance and investments."

He concludes by suggesting the following tentative goals for an ideal health care delivery system: (1) maximum protection, via medical and *social* techniques, of prevention of *avoidable* diseases and accidents; (2) early detection; (3) sufficient acute medical and surgical care; and (4) sufficient post-acute, convalescent, rehabilitative, and terminal care.

A curious blend of polemic and history, recriminations and statistics, this book confuses as it teaches. Allan Chase's anger and frustration may cause the reader to question the credibility of some of the comments and recommendations that are obviously most important to the author.

JEROME M. STEIN

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."

ACTUARIAL AND OTHER MATHEMATICS, STATISTICS, GRADUATION

Richard L. London and Steven B. Russ, *Study Manual for the Society of Actuaries Examination Part 7,* Graduate School of Actuarial Science, Northeastern University, Boston, pp. 209, $12.50. Reviewed in *The Actuary,* January, 1973.

Mathematics in Actuarial Work, special issue of the *Bulletin of the Institute of Mathematics and Its Applications,* Vol. 8, No. 1 (January, 1972). (Single copies of this issue may be obtained for 75*p*. from the Institute of Mathematics and Its Applications, Maitland House, Warrior Square, Southend-on-Sear, Essex SSI 2JY, England.) Reviewed in *The Actuary,* June, 1973.

U.S. National Center for Health Statistics, *Annotated Bibliography on Robustness Studies of Statistical Procedures,* pp. 51, Data Evaluation and Methods Research, Series 2, No. 51, Rockville, Md., April, 1972.

An annotated bibliography consisting of about 360 articles on robustness studies is prepared. Throughout the bibliography, a broad interpretation of robustness has been considered. In each annotation the authors have made every effort to summarize the entire article without judging the relative merits of the articles. Although care was taken to include most of the articles on robustness, especially some unpublished technical reports, it is quite possible that some articles have inadvertently been omitted. This bibliography is by no means complete, since quite a few papers belonging to the category of working papers and unpublished technical reports are not easily accessible. Each article has been classified under a broad classification scheme which distinguishes estimation from testing hypotheses, parametric from nonparametric methods, among various departures from postulated assumptions, and theoretical analysis from Monte Carlo simulation.

U.S. National Center for Health Statistics, *Cohort Mortality and Survivorship: United States Death-Registration States, 1900–1968*, pp. 36, Analytical Studies, Series 3, No. 16, Rockville, Md., November, 1972.

An analysis of mortality rates by age, color, and sex of selected generations of 5-year birth cohorts born 1896–1900 through 1926–30. Compares cohort and period life table survivorship (l_x) by single years of age, color, and sex for selected 5-year cohorts born 1899–1903 through 1928–32. Based on death and population data for the death-registration states of the United States each year from 1900 to 1968.

Life Insurance and Annuities

Actuarial Values I: Valuation of Last Survivor Charitable Remainders—Part B—Two-Life Tables for Unitrusts and Pooled Income Funds—Internal Revenue Service Publication 723B (11-71), Superintendent of Documents, U.S. Government Printing Office, Washington, D.C. 20402, $4.50. Reviewed in *The Actuary*, February, 1973.

Joseph M. Belth, *Life Insurance: A Consumers' Handbook*, Indiana University Press, Bloomington, Ind., 1973, pp. 248, $6.95. Reviewed in *The Actuary*, March, 1973.

Health Insurance

The National Center for Health Statistics publishes "Vital and Health Statistics," a collective title which includes several series of reports; some of those published recently may be of interest to actuaries. Several are digested below. To be placed on the mailing list for all items in the several series write to:

National Center for Health Statistics
U.S. Public Health Service
HEW Building South
Washington, D.C. 20025

U.S. National Center for Health Statistics, *Inpatient Utilization of Short-Stay Hospitals in Each Geographic Division: United States—1966–1968*, pp. 45, Data from the National Health Survey, Series 13, No. 10, Rockville, Md., November, 1972.

Statistics are presented on the utilization of short-stay hospitals, based on data collected in the Hospital Discharge Survey from a systematic sample of records of discharged patients obtained from a national sample of hospitals. Discharges, discharge rates, days of care, and average length of stay are distributed by age and sex according to geographic divisions.

U.S. National Center for Health Statistics, *Health Characteristics of Low-Income Persons*, pp. 51, Data from the National Health Survey, Series 10, No. 74, Rockville, Md., July, 1972.

An analysis of health characteristics of persons with family income under $5,000 and comparison of aid recipients with nonrecipients. Describes the population in terms of aid status, demographic characteristics, comparative health status, type and extent of disability, medical care, and hospitalization.

U.S. National Center for Health Statistics, *Acute Conditions Incidence and Associated Disability: United States—July 1969—June 1970,* pp. 65, Data from the National Health Survey, Series 10, No. 77, Rockville, Md., August, 1972.

Statistics on the incidence of acute conditions and the associated days of restricted activity, bed disability, and time lost from work and school, by age, sex, calendar quarter, residence, and geographic region, based on data collected in household interviews during the period July 1969—June 1970.

U.S. National Center for Health Statistics, *Dental Visits Volume and Interval since Last Visit: United States—1969,* pp. 72, Data from the National Health Survey, Series 10, No. 76, Rockville, Md., July, 1972.

Statistics on the volume of dental visits and the time interval since the last dental visit, by age, sex, color, family income, education of the head of family, usual activity status, place of residence, and geographic region. Also, per cent distribution of persons by frequency of visits in a year. Based on data collected in health interviews during 1969.

U.S. National Center for Health Statistics, *Physician Visits Volume and Interval since Last Visit: United States—1969,* pp. 58, Data from the National Health Survey, Series 10, No. 75, Rockville, Md., July, 1972.

Statistics on the time interval since last physician visit, the volume of physician visits, and the number of visits per person per year by selected demographic characteristics. Also, statistics on the number of physician visits by place of visit, type of service, condition causing visit for diagnosis and treatment, length of time to get to the physician, and waiting time at place of visit. Also, per cent distribution of persons by frequency of visits in a year. Based on data collected in health interviews during 1969.

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A. Rettig and O. Nichols, *Some Mathematical Aspects of the Social Security Amendments in Public Law 92-603,* pp. 18, Actuarial Note No. 80, Social Security Administration, Washington, D.C., January, 1973. Reviewed in *The Actuary,* January, 1973.

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Robert J. Myers, *Summary of the Provisions of the Old Age Survivors and Disability Insurance System, the Hospital Insurance System and the Supplementary Medical Insurance System,* pp. 21, Mimeograph, November, 1972. Reviewed in *The Actuary,* February, 1973.

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New Survivors Plan for Military Retirees, pp. 3, Office of Research and Statistics Note No. 26-1972, Social Security Administration, Washington, D.C., December, 1972.

This note discusses the new survivor benefit plan for retired military personnel under which all future retirees will automatically be covered, unless they elect not to participate. The plan was signed into law on September 21, 1972. It replaces the previous Retired Serviceman's Family Protection Plan, which had been in operation since 1953. Those under the RSFPP can continue in it or/and elect into the new plan, but new retirees cannot participate in the RSFPP. The annuities paid under the plan are integrated with survivor payments under the OASDHI program.

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This is the seventh in a series of annual works of the same title that began in 1966. They are updatings of the *Life Insurance Annual Statement Handbook* produced in 1962 by the author, which demonstrated through examples the methods for putting the information required for the annual statement into the annual statement format.

The current work's primary emphasis is on the changes made between 1971 and 1972. It also includes copies of the *NAIC Valuation Procedures and Instructions for Bonds and Stocks,* the NAIC *Instructions for Completing Life and Accident and Health Annual Statement Blank,* a cross-reference table up to date through 1972 for annual statement entries, and an index to changes in the Annual Statement Blank for the years 1966–72. Changes in the various instruction forms as well as in the blank itself are highlighted with some additional editorial comment by the author.

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