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BOOK REVIEWS AND NOTICES*

*Howard Winklevoss, *Analysis of the Cost of Vesting in Pension Plans*, pp. 98, Labor-Management Services Administration, U.S. Department of Labor, Washington, D.C. 20210, 1972.

This study was completed for the Department of Labor during 1971-72. The study was intended to set forth the range in costs of various vesting provisions as a guide to those persons concerned with legislation mandating minimum vesting standards. The underlying mathematical formulas, and the rationale therefor, are contained in a paper, "Estimating the Cost of Vesting in Pension Plans," coauthored by Dr. Winklevoss and Arnold F. Shapiro, A.S.A., presented at the 1972 annual meeting of the Society of Actuaries. Whereas the *TSA* paper sets forth theory and formulas, the Labor Department study provides the numbers resulting from a computer simulation model based on that theory.

The study begins with a description of the cost concepts and actuarial cost methods, covers the factors affecting pension costs, describes the methodology employed in the computer simulation, and, in various tables, sets forth the resulting costs with a full commentary en route. The percentage increase in pension cost was determined for three vesting provisions: (1) the "rule of 50," where 50 per cent vesting is granted when age plus service equal 50 with at least three years of service included in the total and with an additional 10 per cent vesting granted each year thereafter; (2) full vesting at ten years of service; and (3) graded vesting commencing at 10 per cent with six years of service, with an additional 10 per cent each year thereafter, to 100 per cent at fifteen years. The cost estimates were then based on an assumed hiring age distribution from 20 through 50 (having an average age of 29); retirement at age 65; mortality on the *Ga*-1951 Table projected by Scale C to 1970; employment termination on three tables characterized as light, moderate, and heavy; and 6 per cent interest. The simulation commenced with the initial creation of the labor force and developed costs at ten-year intervals through eighty years, based on a growing labor force for the first fifty years and a declining labor force for the next thirty. This approach has the advantage of developing cost figures for employee groups in various stages of maturation. Benefits were assumed to be a flat unit of benefit for each year of credited service, and deferred vested pensions were assumed to commence at age 65. The vesting costs assume that the particular vesting provision has been in effect from the initial creation of the labor force.

* 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*.

The study sets forth the average age and service of the active employees at each of the ten-year intervals, together with the then current annual rate of growth and aggregate termination rate on the given withdrawal table. The number of vested employees is shown as a percentage of the active group, together with the average service and the present value of expected benefits of the vested employees. Ratios of vested cost to normal retirement cost are shown on the entry age normal cost basis and the unit credit basis separately as to normal cost and past-service liability, and the ratio of present value of future benefits for vested benefits to the present value of retirement benefits is also shown. Separate tables of this type are given for the light, moderate, and heavy termination experience assumptions.

The study explores the effect on the ratio of vested cost to regular retirement cost of changes in the interest assumption, the benefit unit, the entry age assumption, the retirement age assumption, early retirement provisions, and eligibility requirements. The discussion is thorough and professional. The study is, however, marred to a minor degree by the author's penchant for using the initials for various concepts throughout the discussion. This makes the reading even more difficult for the practicing actuary, since the author employs the Philadelphia brand of "Pension Esperanto" throughout. Thus, for example, the letters PBNC are used for the normal cost on the entry age normal cost method (the individual projected benefit cost method with supplementary liability, in Philadelphia "P.E."). Further, at pages 9 and 58 the author gives in to personal bias and describes the entry age normal cost method as one which "must over-allocate pension costs in the early years of employment and under-allocate costs in the latter years of employment in order to level out the natural or true increase in pension costs." Possibly the author's selection of a flat dollar unit benefit has led him to the unit credit method as the natural or true pension cost, but many practicing actuaries would hold that the entry age normal and aggregate cost methods are also natural and true.

The study suggests, as the most desirable measure of relative cost of vesting, the ratio of present value of prospective vested benefits to present value of future pensions. The best reason given for the use of this factor is that it develops a single number. Many practicing actuaries have considered the normal cost on the entry age normal cost method to be a valid measure of vested pension cost because this normal cost will show the effect of any plan change on the endless stream of new entrants of the future, whereas the present value of future benefits, the past-service cost, or the unit credit normal cost will vary with the maturity of the labor force, with the degree to which past inflation may have affected benefits, and so on. The vesting cost tables summarizing the results of the study suggest that, by and large, the normal cost on the entry age normal cost method does serve as a reasonable measure of vesting cost and demonstrates that it is independent of the relative maturity of the given group. These tables also show that the normal cost on the unit credit method develops sharply declining relative vesting costs with increasing maturity and that the present value of expected benefits develops increasing

relative costs with increasing maturity. I suspect that if Dr. Winklevoss had not developed the theory for the simulation model first, and written up its description, he might, after review of his end results, have been less critical of the use of the entry age normal cost and its changes as a valid measure of relative vesting cost.

In the initial development of the pension cost measurement methods, the author questions the use of actuarial cost methods and suggests that the present value of future benefits is the method which develops the "true overall cost impact of vesting." Most employers who pay for pensions would question this definition of "true cost" and suggest as an alternative that the increase in their annual contributions for the plan, particularly if that increase is expected to continue for ten or twenty years, is the "true cost" so far as their organization and their pension plan are concerned.

This study will probably prove to be of far greater value to the actuarial profession than to legislators, simply because the subject is a complex one and the treatment is so thorough. One drawback from the legislators' standpoint is that the relative cost of vesting shown at any given stage is not equal to the cost of adding that particular vesting provision to a plan without any vesting but rather is the difference in prospective benefit payments, by one of five measures, between a plan which provided vested benefits from the outset and one which did not. Very complex modifications are required to adjust for increasing or wage-related benefits and for the various degrees of vesting which are already in effect, so that the legislators who are looking for a simple answer such as "the cost of vesting by rule of 50 is X cents per hour" will probably be disappointed in the indefinite nature of the results. On the other hand, the large number of vested individuals relative to active workers on the graded vesting formula may already have led to the deletion of the 10 per cent at six years and 20 per cent at seven years vesting requirements in the final version of the pension reform bill reported out by the Senate Labor Subcommittee (S. 3598).

The Labor Management Services Administration of the Department of Labor is making copies of this study available to interested persons at no cost. Every actuary interested in pensions should obtain a copy and study it. Its very breadth and thoroughness, coupled with the ready availability of the underlying theory in the companion paper in the *Transactions*, make it an extremely valuable addition to the literature on vesting.

PAUL H. JACKSON

*John P. Mackin, *Protecting Purchasing Power in Retirement: A Study of Public Employee Retirement Systems*, pp. 249, Fleet Academic Editions, Inc., New York, N.Y., 1971, $15.00.

Here is one of the rarities among recent texts on pension plans—a book which sets forth facts on present pension practices together with a balanced presentation of advantages and disadvantages of the various approaches that have been taken. There is no advocacy of specific legislation, no prejudging

of the issues, no strong opinions as to the only right way to do things. It is not so surprising that a well-organized, well-reasoned, thoroughgoing text can be prepared on protecting purchasing power for pensioners, but that such a text should appear amid the current hullabaloo over pensions seems miraculous, and in view of the fact that the subject is public retirement systems, where the strongest of opinions are held and where political ramifications run rampant, the author's accomplishments are all the more remarkable.

In brief, the author considers public employee retirement systems, inflation, and the ways in which the various public systems have gone about the task of adjusting the benefits for those already retired. The text commences with a discussion of the earliest public systems and gives considerable detail on the Federal Civil Service Program and the Military Retirement Pay Plan. State and local systems are described in general terms, and there is extensive reference to basic documents in the footnotes to this section. The text then shifts to the consumer price index and what it is intended to measure, together with the trends in the index. There is discussion of the special problem of determining changes in the living costs of pensioners. The prevalence of social security among those covered under public employee retirement systems is considered, along with the various implications for the uncovered groups as to both retirement income and Medicare.

Most public employee retirement systems base benefits on final average earnings, so that retirement benefits can be considered to have been adjusted up to the point of retirement. Many of the public systems have gone on and adjusted pensions already in the process of payment, and the author breaks the approaches down into six principal categories, with a chapter devoted to each. These six approaches are (1) ad hoc increases, (2) supplements contingent on favorable actuarial experience, (3) automatic increases, (4) increases based on the consumer price index, (5) adjustments related to salary changes, and (6) variable annuities. In each of these chapters there is a description of the specific details of the adjustments that have been made by individual systems, followed by a discussion setting forth the advantages and disadvantages of the approach from the standpoint of the pensioner, the legislators, and the public.

The chapter "Economic Change and the Older Population" sets out in some detail the specific items used in developing the consumer price index and the variations from that "typical market basket" that seem characteristic of the expenditures of retired people. The Colorado pensioner price index is described, and considerable detail is given regarding its variations from the consumer price index over the three years since the Colorado index was developed. In 1963 the Colorado Bureau of Economic Research concluded that the consumer price index would serve as an excellent guide to the impact of price change on pensioners and discontinued their special pensioner index. The author considers the effects of Medicare and of price changes on low-income groups, and the specific characteristics of the aged relative to living standards. Certain measures of living standards, such as wage levels, per capita disposable income, per capita gross national product, and productivity measures such as output per

man-hour are also considered, along with poverty levels and retired couples' budgets. The following chapter on social security discusses the types of adjustments recommended for that program by various groups and the question whether such adjustments properly should only replace the income loss due to cost-of-living changes or should compensate for changes in the standard of living as well.

The earliest approach to adjustment of pensions, and the most common until the last decade, has been by ad hoc upward adjustment. The many types of changes that have been made are described by numerous examples in the chapter "Ad Hoc Increases." These increases have involved graduated percentage increases, fixed percentage adjustments, flat dollar increases, increased minimum benefits, revised past service, and the like. Generally these changes have required a specific plan amendment, specific legislation, and a decision as to how to fund the particular increase.

The chapter "Supplements Contingent on Favorable Actuarial Experience" does not comment on the rather tenuous connection between the income needs of retirees and favorable actuarial experience but rather sets forth from a practical standpoint the many techniques that have been used under public systems to provide supplements. The provision of supplements for the retired group by the application of actuarial gains and the continuation of an already authorized level of expenditure has clear-cut legislative advantages which may well account for the widespread use of this method. On occasion, benefit adjustments have been made by raising the interest assumptions, by adopting a new funding policy, by extending the amortization period for past-service liabilities, or by changing the value of the common stocks held in the fund from book to market value. Some of these supplements have been declared on a year-to-year basis, while others have been instituted on a guaranteed lifetime basis. One of the special methods described is the multiple interest technique, under which the funds allocated to retired member reserves are revalued on a "most probable" set of assumptions rather than the usual conservative actuarial assumptions. In describing this method, the author quotes Davis Roenisch, F.S.A., at length. The multiple actuarial interest technique essentially is based on the principle that, if it can be assumed that retired reserves will earn an additional X per cent interest each year, then the initial reserve for the pensioner will be exactly sufficient to provide a pension whose amount increases by X per cent for each year of retirement. The author notes that the basing of retirement supplements on excess interest is a valuable technique because of its eminent practicality rather than its theoretical correctness, since at the present time most of the assets of public retirement systems are invested in fixed-income securities, and changes in the average rate of return to the fund are therefore generally unrelated to current changes in living costs.

The chapter "Automatic Increases" lists a surprising number of systems which have instituted such increases, generally at the level of 1 or $1\frac{1}{2}$ per cent per year. Many of these automatic supplements apply only to those pensioners who, while active, agreed to special contributions for postretirement increases.

Such special contributions generally have run from ½ to 1 per cent of pay and, surprisingly, have usually been subject to complete forfeiture on separation by death or termination of employment.

The chapter on cost-of-living adjustments provides extensive background information on the Federal Civil Service Program, the past legislation putting in the consumer price index adjustment, and the Civil Service Commission's deliberations on the advantages and disadvantages of such adjustment. The military retirement system and its present cost-of-living adjustment are similarly described. There follows extensive documentation of a number of state retirement systems which have gone to CPI indexing, namely, those of Massachusetts, New York, Alaska, Utah, California, Colorado, Connecticut, Georgia, Idaho, Louisiana, New Jersey, North Carolina, Ohio, South Carolina, and Virginia. Finally, the pension systems for Los Angeles police and fire and city employees are described. Some of the rationale underlying specific provisions is described in some detail. For example, the New York City retirement system adopted a maximum on consumer price index changes that would assure that retired employees would not receive a benefit increase larger than the increase in active salaries. Although funding difficulties are noted, the author observes that the automatic adjustment mechanism has the advantage of giving the pensioner constant purchasing power and eliminates the uncertainty that would otherwise exist regarding the timing and amount of benefit increases if specific legislation were required for each such change.

Only a few public systems have raised pensions with salary. Historically the Military Retirement Pay Plan followed this approach for almost one hundred years, until 1958, when the practice of "recomputation" of military retirement pay was abandoned. In 1963 the military system was amended to provide cost-of-living increases which now parallel those made under the civil service retirement system. The author notes, however, that the retired military personnel view the abandonment of recomputation as a broken promise and consider the consumer price indexing a trivial sop. The salary indexing under the District of Columbia police and fire program, the Maine state retirement system, and the Connecticut system, prior to 1969, are also described. In the commentary it is noted that indexing the benefits of retired employees to the changes in the pay rates applicable to their previously held positions tends to eliminate disparity between old and new retirees who held the same job for the same period of time. Further, adjustments based on salaries have the advantage of reflecting local conditions and, whereas movements in the consumer price index are beyond the control of the employer, he does have some control over salary levels and can consider any associated pension cost for both active and retired employees at the time of any change in salary levels. Unfortunately, as noted by the Civil Service Commission, "[a]djustments in pay scales and improvements in the retirement system for active employees are two important methods available to the government for attracting and retaining competent personnel. These actions taken to enable the government to better compete in the labor

market have no direct bearing upon the adjustment needs of annuitants. Nor do adjustments to annuitants contribute in any degree toward the objective sought by pay adjustments and retirement liberalizations for the future." The author notes that, with very few exceptions, the trend in the purchasing power of salaries has been upward, so that the cost of adjusting pensions by salary changes will generally exceed the cost of adjusting pensions by cost of living.

The chapter covering variable annuities provides excellent coverage and is unusual in the sense that most variable annuity material readily available is sales material pointing out only the considerable advantages in the products. The text includes the trend in stock prices and contains a table showing the major declines in common stock prices since 1946, together with the corresponding change in the consumer price index. This table shows that consumer prices have increased in all but one of the twelve post-World War II periods in which there were stock price declines in excess of 10 per cent. The text continues with a description of the TIAA-CREF program and provides a table showing the experience from 1953 to 1969 as to the annuity unit value received by those collecting benefits. This table, together with the consumer price index values previously presented, shows that in the first eight years of operation under CREF the annuity unit values rose at a compound annual rate of 13½ per cent, while the cost-of-living index was rising at a compound annual rate of 1.4 per cent. On the other hand, if the CREF table were extended to the 1972 annuity unit value of $30.64, the 1967–72 period would show the cost-of-living index increasing at a compound annual rate of 4.5 per cent, while the annuity unit value was standing still (increasing at a rate of 0.1 per cent annually). These sharp variations in short-run periods do not, of course, detract from the value of common stocks as an investment medium in the accumulation period, but they do suggest an erratic character in the benefit payout period, which may last only five, ten, or fifteen years in many cases. Besides the TIAA-CREF program, separate experience is provided for the Wisconsin fund, the TVA retirement system, and the New York City teachers, Minnesota teachers, Oregon public employees, and New Jersey supplemental variable annuity systems. The Appendix contains a description of the benefit increases provided by state retirement systems since 1960.

A number of important aspects of the subject of public retirement systems and pensioner adjustments are not covered in the text—for example, the pressures on public systems to provide unrealistically large benefits, to permit early retirement on extremely generous terms, or to convert from a funded pension system to pay-as-you-go for budgetary reasons. Further, there is a minimum of comment on the political ramifications of some of the adjustments, on the difficulties of obtaining consistent and regular legislative action for pensioner increases, and on the misleading nature of the practice of fixing an initial level of contribution on conservative actuarial assumptions and later permitting benefits to increase without apparent cost to the electorate.

The author's focus in this book is upon the various specific approaches that have actually been used up to this point to adjust retirement income under public retirement plans, and he presents a maximum of fact and adequate commentary. The treatment is balanced and fair, and the coverage of this important topic is most thoroughgoing. The end result is a very well-written and well-organized text with excellent documentation. This is indeed a valuable contribution to pension literature, and any actuary involved in pension work will find the careful study of this book highly rewarding.

PAUL H. JACKSON

*Henry S. Shryock, Jacob S. Siegel, and associates, *The Methods and Materials of Demography*, U.S. Government Printing Office, Washington, D.C., 1971, 2 vols., $7.00.

That the Shryock and Siegel volumes are monumental is the least that can be said of them. Over 900 pages long in $8\frac{1}{2} \times 11$-inch format, they provide answers to many of the questions that demographers worry about. So ambitious a compendium has not been attempted before in this or related fields, and decades are likely to pass before it will be attempted again. The price is suited to the pocket of the poorest of demographers, actuaries, public health workers, sociologists, and other social scientists. All of these will use it for substance as well as methods; it makes other books at its level seem incomplete.

The first of the two volumes deals with cross-sectional characteristics of populations as ascertained in censuses and sample surveys. Numbers and territorial distribution, age, sex, marital status, education, occupation, industry, and employment are among the characteristics to which ample attention is given. This part could be called the statics of demography.

The second and longer volume deals with change of population over time, including the processes of birth and death. The factors of change are studied by means of life tables, measures of natality and nuptiality, and stable population theory. Techniques suitable for use in statistically underdeveloped areas are to be found throughout, and one chapter is specifically devoted to them. Population projection is extensively treated. All this may be called the dynamics of demography.

In a large book one looks for a large number of typographical errors—the law seems to be that the density rises in proportion to the length of the work, so the absolute number of errors goes up in proportion to the square of the length. The reader will be as pleasantly surprised as this reviewer to find that the present book is virtually free of such errors.

It does suffer from some inelegancies, of which this review has space for one example. The authors calculate doubling time with the equation $e^{rt} = 2$, given r, and for the unknown time t come up with

$$t = \frac{\log 2}{r(\log e)} ; \qquad (1)$$

they then apply this result in an example in which both log 2 and log e to base 10 are entered to seven decimal places. Nowhere is the reader told that the ratio log 2/log e is simply 0.693, so that the doubling time can be written as

$$t = \frac{69.3}{100r},$$

where $100r$ is the percentage rate of increase. This gives exactly the same 16.9 years that the authors find for Costa Rica's $r = 4.1$ per cent and is far better suited to mental arithmetic than their seven-decimal logarithms to base 10. Even better is $t = 70/100r$, which is easier to remember and, if r is compounded annually rather than continuously, is slightly more accurate for positive rates of increase up to 4 per cent per year.

After seeing the unnecessary complexity introduced here, one is relieved to find that by page 733 the authors have discovered natural logarithms and show a perfectly simple and correct calculation of the annual increase that corresponds to a given decennial increase (although here also the use of eight decimal places represents a misplaced concern for accuracy).

The authors forgo the opportunity to mention that equation (1) is true whatever the base of the logarithms and that the base e and the base 2 make it especially simple and hence these two bases have a special place in demographic work. On this and other matters questions addressed to the reader would have helped stimulate his thought.

One troublesome issue in the writing of a book like this is the degree to which it ought to be made self-contained. How much of such subjects—used in demography but not a part of it—as sampling theory, statistical inference, graduation and interpolation, even calculus, ought to be included? One can hardly assume that the reader knows all of these; if he did, he would probably also know much of the demography expounded. The authors have a highly developed sense of what is required, resulting from their experience with students and trainees in the United States and in less-developed countries. At least this reviewer's judgment coincides with theirs on the degree to which they have explained ancillary techniques that are common to demography and to other fields in which statistical work is done. The major omission is computer programming, which no one using the methods of this book will be able to do without.

The matters of concern to demographers on which Shryock and Siegel are less insistent or which they omit altogether are largely those where population study overlaps with some substantive field. They do not pretend to cover the economics or the sociology of fertility or the subjects of population genetics, historical demography, and actuarial calculation. Their compendium of techniques is oriented to the collection and interpretation of census and vital registration data. They have not even been tempted by the mysteries and excitement of population forecasting. By virtue of their respect for the difficulty of forecasting, the authors (like the Bureau of the Census) confine themselves to population projection on the basis of alternative assumptions.

No brief review can do justice to the meticulous attention to detail within the area covered by this book. It represents the lifework of eleven associate authors besides the two main authors, who draw on the accumulated literature of demography with knowledge, skill, and discretion. Setting forth and systematizing existing knowledge, the work is a sign that demography has come of age, and it does for that field what the *Encyclopédie* did for European knowledge of the eighteenth century and what Spurgeon did for financial calculations involving life contingencies. Every later work on demography will have to take account of Shryock and Siegel.

The Bureau of the Census has been an innovative leader in many fields, from sampling to the development of computers; it puts us again in its debt by its sponsorship of this book.

NATHAN KEYFITZ*

*Nathan Keyfitz and Wilhelm Flieger, *Population, Facts and Methods of Demography*, pp. 613, W. H. Freeman and Co., San Francisco, Calif. 1971, $13.50.

This book is intended as an advanced textbook for sociologists interested in the application of modern demographic techniques. It is particularly geared to the researcher who can avail himself of computer service in his work. The presentation not only covers the theoretical basis for the analyses but also encompasses a series of elaborate computer programs that have been prepared with the idea of maximum compatibility with the various systems now in operation.

A significant quantity of data for many different countries is analyzed and explained in this book. This procedure provides a basic understanding of the computer as a tool in the study of dynamic populations. The exposition is simple, and the examples are pedagogically excellent. The decomposition technique for births and deaths, worked out for Sweden and Venezuela, is a good illustration.

The book presents in computational form the effect of the continuation of the various demographic factors in future populations. The results demonstrate the unacceptability of such continuation.

The authors develop a standard set of statistics that characterizes any population. This permits very useful comparisons between the 700-odd populations for which calculations are presented.

This is an excellent book on demographic data and its analysis, but it does not compare with Spiegelman's *Introduction to Demography*, the textbook recommended by the Society, with respect to sources and the theoretical basis and development of demographic analysis.

FRANCISCO BAYO

* Mr. Keyfitz, not a member of the Society, is Andelot Professor of Demography and Sociology at Harvard University.

Yung-Ping Chen, *1971 White House Conference on Aging: Income—Background and Issues*, pp. 104, Institute of Industrial Relations, University of California at Los Angeles, 1972, $2.00.

This paper on income for the aged was developed to provide background information for delegates to the National White House Conference on Aging, held in Washington, D.C., November–December, 1971. The paper discusses the income needs of the elderly in general terms, relating them to various poverty measures and standard budgets developed by the Department of Labor, and provides statistical tables showing the income of the aged, their net worth, homeownership, liquid assets, and the like. The paper examines the particular effect of inflation on the retired group. It is stated as a general principle that a person gains from price inflation if he owns real estate for which the market prices change with the price level and if at the same time he owes debts whose market values do not vary with price-level changes. Unless both conditions exist, one cannot benefit from inflation. For the older persons, however, while a higher proportion of them are homeowners than is the case in the entire population, they also have much less average debt. Further, in order that they may benefit from the higher value of real estate, the home must be sold and, in general, older people have a stronger psychological attachment to their homes. The author suggests the development of some form of private instrument which might enable the aged homeowners to sell their homes for a life income payable immediately, with property transfer taking place at date of death.

The special problem of medical expenses for the elderly is covered in some detail, along with figures showing the effect of Medicare and Medicaid. The rather naïve contention is set forth that the cost of medical care for the elderly would be reduced if comprehensive national health insurance were adopted because "combining a high risk group (the aged) with a less vulnerable group (the non-aged) would provide a spreading of cost over a larger number of people; thus, the cost per unit of care for the elderly would be smaller. For this reason it has been suggested that some form of comprehensive national health insurance system be established with minimum delay."

Private retirement plans are accorded minimal treatment in this text, although it is admitted that they may have made a significant contribution toward income maintenance in retirement. Various Labor Department studies show that the growth of coverage under private retirement plans has slowed considerably and that most of the current growth is attributable to growth of employment in companies already having such plans. The author states that one important issue "is the gap between the large number of employees covered and the relatively small number of pensioners, which can be explained in large part by vesting and eligibility requirements." Actuaries will recognize that this is due partly to the smaller number of lives over age 65 relative to those aged 20–64 in a mortality table and partly to the immaturity of retired groups resulting from the establishment of private pension plans in recent years. The

fact that a college professor can conclude that the smaller number of pensioners is due to vesting will perhaps indicate the extent to which the current pension debate is conducted in an atmosphere of total ignorance.

The paper contains various tables setting forth the financial characteristics of the aged. Most of these tables have already appeared in various Labor Department publications. Their collection in one place does, however, provide a convenient source of information.

Following the paper itself, several major issues relevant to the income needs of the elderly are set forth. These issues were formulated by the Technical Committee on Income for consideration by participants at the White House Conference. Essentially, these issues are summarized in the following questions: Older people should have adequate income, but what level of income should be regarded as adequate? Assuming that society has accepted responsibility for providing older people with a minimum income, how should the income be provided? In view of the growing dependence on private pensions and individual savings for retirement, should government intervene to encourage increased coverage and to ensure receipt of benefits by workers and their survivors? Given the higher illness and disability rates among the elderly and their lower average income, should older people continue to share the cost of health coverage, or should the country adopt a national health insurance plan and spread the cost over the younger and middle-aged groups? Finally, do the needs of the elderly warrant action by federal or state governments along the lines of partial or total remission of property taxes to increase their financial security and help them to continue to live in their own homes?

The basic thrust of the background paper is to focus attention on needs and to suggest that "the system" has somehow failed us if any individuals end up with less than they want. The cause-and-effect relationship between the performance of work and income is not mentioned in this document. As evidence of changing social attitudes, however, the paper will serve as a valuable source of information on the elderly.

PAUL H. JACKSON

Donella H. Meadows *et al.*, *The Limits to Growth*, pp. 205, Universe Books, New York, N.Y., 1972, $6.50 hardcover, $2.75 paperback.

This is a Potomac Associates book which represents a report for the Club of Rome's Project on the Predicament of Mankind. The Club of Rome is an informal international organization of scientists, businessmen, and others interested in promoting new policies regarding the worldwide system in which we live.

The report covers the first part of the work done at the Massachusetts Institute of Technology, by a research team directed by Professor Meadows and financed by the Volkswagen Foundation. The team addressed its efforts to a better understanding of the interrelationships among population, agricultural production, industrial production, natural resources, and environ-

mental pollution when seen from the point of view of the limitations of the planet in which we live.

The research was performed by means of a computer model which incorporated some known relationships as well as some others that had to be hypothesized. To the extent possible, these relationships were quantified on the basis of the actual past experience.

This is an easy-to-read book written for the general public. Most of the findings of the research are explained in simple language with the aid of numerous graphs and charts. A substantial portion of the report is devoted to educating the readers as to the nature of exponential functions or geometric growth. The idea is to impress upon them the fact that unchecked exponential growth can overwhelm us suddenly before we have time to act. The report's general position is that we must start looking into the conflict between a limited world and the various instances of geometric growth within it. This book is a good step in that direction.

This research points toward the inevitable acceptance of a stationary population and a stable, nongrowing economic world, if we are going to survive past the next century. The implications regarding the needed changes in human behavior (political, economic, social, and so on) are staggering. I hope every actuary will have a chance to read the report.

FRANCISCO BAYO

Population and the American Future: The Report of the Commission on Population Growth and the American Future, Signet Books (paperback), pp. 362, March, 1972, $1.50.

This report is the end product of a massive study which was conducted over a period of about two years by a special commission called into being by an act of Congress (Public Law 91-213, approved March 16, 1970). The commission consisted of twenty-four members representing universities, research institutions, and various segments of the public. Consistent with the trend of the times, the membership of the commission also included two housewives and two male students. The chairman was John D. Rockefeller III, and the executive director was Dr. Charles F. Westoff.

The reader will undoubtedly recall the furor this report caused upon its appearance. Its short-lived fame was due in the main to the recommendations for broad and practically unrestricted birth-control education and for legalized abortion. The other and relatively more important issues discussed in the report received scant public attention. Perhaps this report is destined to begin gathering dust together with numerous other serious reports of commissions, task forces, and special study groups under different names. It would indeed be a pity if current activity on the problem of population growth were to end with the filing of this report; the issue is much too important to be shoved under the rug by the too-often-used expedient of relegating it to a study commission. As for this report, it is an important contemporary document which is worth reading and thinking about.

It appears that the commission spared no money or effort to examine all aspects of population growth in the United States. The commission employed a staff of forty, utilized the services of eighty-two consultants (nine of whom also served on the staff), and had at its disposal one hundred research papers prepared especially for its use.[1] This great diversity of expertise and source material makes it impossible for any single individual to attempt a critical appraisal of the commission's findings and recommendations. Accordingly, this review will be limited to calling attention to certain parts of the report, with only an occasional comment but without consistent evaluation or criticism.

The first several chapters deal mainly with the general aspects of population growth. First and perhaps foremost, there is the crucial question whether the slowing down of population growth in the United States will not bring with it economic stagnation and a scarcity of jobs. This question is particularly pertinent, since the necessity for continuous economic growth has become accepted as dogma by most people. The commission assures us that there is nothing to fear on this score. In its own words, "We have looked for, and have not found, any convincing argument for continued national population growth. The health of our economy does not depend on it. The vitality of business does not depend on it. The welfare of the average person certainly does not depend on it" (p. 53). Whether this finding is based on sound economic and demographic premises or is mainly a matter of opinion is difficult to say. One has the impression that the element of opinion is quite strong in this area.

Another thorny question discussed in the report is the probable attitude of minority groups toward active participation in a program of population control. Here the situation is far from encouraging. One representative of these groups is quoted as saying that the only way the establishment can be made responsive to the needs of the minorities is "through sheer weight of numbers." Another representative stated that any governmental efforts in the field of population will be viewed by minority groups with distrust if not with outright alarm (p. 110).[2] The only reassurance the commission could give us on this point was to refer to its own public opinion survey, which revealed that "most black people believe continued growth is a problem for this nation." It should be noted, however, that only 51 per cent of the respondents considered population growth a serious problem. Furthermore, the report does not tell us whether the survey included a question on the acceptability of population control measures by the black community.

[1] These papers were not available to the reviewer, since the Signet Book gives only the titles and the authors. All or at least some of them will probably be published at a later date by the Government Printing Office.

[2] The highly controversial nature of this problem is evidenced by an incident which took place at the June, 1972, environmental conference in Stockholm, Sweden. *Time* of June 26, 1972 (p. 40), reports that a woman delegate from Nigeria seized the microphone from Paul Ehrlich (a consultant to the commission) and declared that "birth control was merely a way for the industrial powers to remain rich by preserving the status quo."

Another basic issue discussed in the report is the relationship between population growth and environmental pollution. Here the commission treads very lightly, acknowledging that big reductions in pollution can be achieved only by a head-on attack. Slower population and economic growth would help but will not be decisive factors in the fight against pollution.

After discussing at some length the general aspects of the problem and citing statistics (derived from projections) in support of the desirability and feasibility of population control, the report proceeds to list a number of specific recommendations aimed at the implementation of the control program. The recommendations include the creation of special study and research groups, the allocation of greater public resources to population control activities, the wide dissemination of birth-control information to adults and minors, and the legalization of abortion.[3] Among the proposed new research activities, the report lists (1) the improvement of vital statistics related to birth, death, marriage, and divorce; (2) the enlargement and improvement of special census information on minority groups; (3) the rapid development of comprehensive statistics on family planning services; (4) the supplementation of the decennial census by a mid-decade census of the population; and (5) the access of private research agencies to identity-free tapes containing basic statistics gathered by government agencies. This program would, of course, call for the establishment of new federal departments, commissions, and similar bodies. Among the new bodies specifically mentioned are a department of community development, a demographic unit attached to the Council of Economic Advisors, and state agencies and commissions dealing with population problems. It is recognized that this would require large outlays of money, but no cost estimates are given in the report.

The report includes a considerable body of statistics and demographic projections, of which the following items seem especially noteworthy:[4]

1. In 1969 the average number of children per family (probably couples with wife under the age of 45) was 2.4, and the population totaled 205 million. Should the average come down to two children per family, the population in the year 2000 will be 271 million, and one hundred years from now the total will be about 350 million. However, a three-child average will result in 322 million people by the year 2000 and nearly a billion a hundred years from now.

2. By the year 2000 the dependency ratio (defined as the number of persons age 65 or over plus those under 18 per 100 persons aged 18–64) will be 62 with a two-child average family but 80 for a three-child average.

3. The pressure exerted by the large influx of new entrants into the labor market should ease off by the 1980's. What happens later will depend upon fertility patterns.

[3] The report makes the interesting observation that until the 1830's abortion was legal in all states of the Union, and restrictions against abortion were gradually introduced later.

[4] Much of this research was based on the Census Bureau's *Current Population Reports, Series P-25, No. 470: Projections of the Population of the United States by Age and Sex, 1970 to 2000.*

If families have two children on the average, the number of new job seekers in the 1990's will be about the same as in the 1980's, but larger families will result in a steadily increasing labor force and in great pressures in the job market.

4. Even if all immigration were to be halted and couples were to have only two children on the average, the United States population would continue to grow for another seventy years.

5. Further reductions in death rates will not significantly increase the population, since they will be largely confined to the older ages. At the reproductive ages, the death rates are already so low that reductions in them will not significantly decrease the number of deaths.

6. It is not true, says the commission, that population growth is greatly fueled by the poor and the minorities. In support of this assertion, the commission cites a statistic that the Spanish-speaking, the Indians, and the blacks contribute only 30 per cent of childbearing in excess of replacement needs. The statistical proof is not very convincing, in view of the fact that the above-mentioned minorities constitute no more than 15 per cent of the United States population.

7. The direct cost of raising a child (in 1969 dollars) is estimated by the commission at $39,924 without counting the loss of earnings by the mother and at $98,361 if the loss of earnings is allowed for. On a present-value basis, the above-cited averages come down to $20,354 and $59,627, respectively.

8. From the point of view of resources and environment, the United States can cope with rapid population growth for the next thirty to fifty years. The relative optimism with respect to environment is at variance with what we are being told about the immediate dangers of pollution by other authorities. The commission tells us, however, that postponement of the population growth issue would greatly aggravate the problems later. Slowing down the population growth will make the difference between prudence and living dangerously.

So much for statistics and projections. As could be expected, certain commission members took exception to one or more of the report's recommendations. As many as eleven members filed separate statements, which are appended to the body of the report. Most of these are relatively brief and are directed toward the recommendations for legalized abortion and the dissemination of birth-control information to minors. Only one separate statement, namely, the one filed by James S. Rummonds, one of youth's representatives on the commission, is tantamount to a wholesale rejection of the report. In his view, one of the crucial problems is society's belief in the desirability of continuous economic growth. Mr. Rummonds would limit economic growth and do away with the worship of efficiency in production. He also makes the observation that increasing real income for everyone will not eliminate the problem of poverty. This is because poverty is a relative, not an absolute, concept. As long as there are large differences in levels of income among individuals, those on the lower rungs of the economic ladder will think of themselves as poor regardless of how comfortable (in terms of necessities) their own life may be.

The reviewer found the report easy to read and very interesting. This document is so well written and well organized that it can serve as a model for good popular writing on complex and technical subjects.

A. M. NIESSEN

Tamar Frankel, "Variable Annuities, Variable Insurance, and Separate Accounts," *Boston University Law Review*, Vol. 51, No. 2 (Spring, 1971), 173-401, Boston University School of Law, 765 Commonwealth Avenue, Boston, Mass. 02215, $1.75.

This treatise was published as Dr. Frankel's thesis for the degree of S.J.D. at Harvard Law School. The text is replete with annotation and documentation, making it valuable source material for anyone interested in the study of equity insurance products. It is study material, not casual reading material. The reader who is new to equity products literature, however, should familiarize himself with bibliographic references in order to ascertain the weight of authority to be afforded certain opinions quoted. Some references deal with the substance of cases; others quote speeches given or articles written. Moreover, Dr. Frankel devotes a not insubstantial portion of Part I of her text to "The Characteristics of an Exempt Variable Life Insurance Policy"—a subject which this reviewer understands is the essence of the petition before the Securities and Exchange Commission and which, at this writing, has received no conclusive decision. Nevertheless, the treatise should be reference material for every actuary, even if only to benefit from Dr. Frankel's research.

The subject matter is subdivided into two parts. Part I addresses itself to the vehicles of variable annuities and variable insurances. Part II dwells on the separate account, with particular attention to the effect of the Investment Company Act of 1940 (and the Investment Company Amendments Act of 1970) on the operations of the separate account. More than two-thirds of the text is devoted to Part II.

In the opening portion of Part I, Dr. Frankel describes the environment in the insurance industry when the variable annuity was first introduced. Sixty references, mostly to articles but many to cases, supplement the first ten pages of her text on the history and development of variable annuities. As she compares and contrasts the nature of variable annuities and mutual fund shares, she essentially covers the major points, although no reference is made to the minimum death benefit guarantees associated with the variable annuity during the pay-in and payout periods.

Dr. Frankel then discusses the risk-shifting and risk-distributing theory of a life insurance contract and contrasts the nature thereof with the nature of an annuity with regard to the investment and death protection risks. Dr. Frankel uses the *VALIC* and *United Benefit* decisions to emphasize the differences between the insurance risk and the investment risk and applies these to the annuity and life insurance contracts. She develops her opinion that these two risks, while different, are not mutually exclusive; thus a life insurance policy, even in the event that the insured can receive no benefit return to himself, can be looked upon as an investment contract if the policy's benefit structure is such that the results of the investment risk affect the benefit, the definition of a security in the securities laws being sufficiently wide. However, she is quick to point out that Congress never intended that the conventional insurance product be brought under the securities laws. She quotes Mr. Justice Brennan's opinion

that insurance is a form of investment which does not present the same "problems the securities acts were designed to solve" and the regulation of which Congress left to the states.

In the concluding passages of Part I, Dr. Frankel summarizes fairly concisely her views of an insurance product which should be exempt from securities laws. She points out that the judgment must be of the policy as a whole. The characteristics of a policy that should be covered by such a judgment should include (*a*) the degree and quantity of equity investment risk borne by the insured and insurance company; (*b*) the investment component; (*c*) the technique used to cover the promise to pay a fixed-dollar amount; and (*d*) the investor. As for a policy meeting the criteria of the ALC-LIAA's petition, she states, "Whether this policy should be exempt from the securities acts depends on how the policy will be written, advertised, and sold."

The status of issuers of variable annuities under the 1940 act is studied in the initial pages of Part II, which addresses itself to the separate account. In the *VALIC* decision the 1940 act applied to the issuer of the securities, VALIC. In *Prudential*, the SEC applied the 1940 act to a separate account of an insurance company, where the company itself was exempt. The considerations surrounding the separation of investment promises and insurance promises are examined in the light of the events leading up to the circuit court's decision in the *Prudential* case. The premise that the 1940 act applies to separate accounts is discussed later in the text; at this point, just the fact that variable annuities were securities within the meaning of the 1933 and 1940 acts is developed. The changes brought about by the 1970 act are expounded in detailed footnotes, after which the separate account is examined as to its identity, the product which the separate account's assets fund, and the conflicts which may arise in the control and management of the separate account's assets. After developing several definitions of the separate account, the author investigates certain questions of the effects of separability or commingling of the accounts with the other business of the insurance company and the effects on the company's income tax. The author then delves into the creation and organization of accounts, developing the methods of establishment, form of organization, voting rights, and the allocation of various liabilities for the business of the account.

In Section IV of Part II, the author reiterates the purposes of a separate account and the means by which the separate account derives its powers to contract and conduct an investment business and then discusses at length hypothetical situations concerning questions of the capacity of the account to sue or be sued under federal or state law. The text of Section V of Part II discusses the effect on variable annuities of voting rights and other mandatory conditions under the 1940 act. Sections VI–IX discuss other legal aspects of the separate account, such as ownership of the assets in the account, insulation against creditors of the insurance company, contractholder control, establishment of the board of directors, and dissolution and reorganization.

Section X is directed to the applicability of the 1940 act to separate account

administration. Dr. Frankel suggests that dual regulation has proved workable (in fact, has more or less functioned efficiently) in the last eight years. She points to the lack of conflict between state and federal law and suggests that the conflicts arise from the industry's resistance to regulation and not from conflicts in law. She uses the examples of "load" which is not regulated by state law and daily valuation not conflicting with annual valuation. She does not include here references to other conflicts discussed earlier in her text.

In discussing the applicability of the 1940 act to separate accounts funding variable insurance policies, the author raises some interesting points. She suggests that the number of votes be related to the face amounts rather than to the reserves which would be the basis for variable annuities in the payout (or insurance) period, since, for the variable annuity, if the payout stops, the reserve will be the present value of the remaining payout. Next the author raises the question whether the right to receive a cash value creates redeemable units in the sense of the 1940 act. Further, she questions whether the policy can be classified as a periodic payment plan. Dr. Frankel recognizes that the cash value is only a fraction of premiums paid in, not accumulated with a view of earnings to be cashed in but accumulated for the purpose of supporting the net premiums in later years to provide the death benefit. She concludes that the cash value is a nonforfeiture option created by default in premium payment and not a redemption of units within the meaning of the 1940 act. On page 387 Dr. Frankel disposes effectively of the concept of the life insurance policy as a periodic payment plan; premiums, she points out, create immediate, present insurance protection, not an accumulation for future benefits.

In her conclusion Dr. Frankel expounds the alternatives to concurrent regulation. While accepting the proposition that state regulation has displayed a history of regulation of the solvency of insurance companies, she questions whether such regulations could also adopt and enforce the policy of investor protection of the federal securities acts. She reviews the possibilities of conditional exemptions to enable states to show effective investor protection; she concludes that there is a need for a different kind of regulation in which state agencies have no special expertise and for which there is in existence an effective alternative, the SEC. She then covers the question of state blue sky laws and finds this alternative less palatable than concurrent regulation. Last, she considers exclusive federal regulation as an alternative. She finds that there is no federal agency equipped to deal with insurance matters and further suggests that such a condition might subject insurance companies to dual regulation of their insurance business. Thus concurrent regulation is inevitable for the present, although this might lead to exclusive federal regulation or to equity insurance regulation on the state level.

An outline of a model act is suggested to clarify problems which arise from state regulation of the insurance aspects and federal regulation of the investment aspects of equity insurance. These problems, in the main, are (1) protection of assets for which state regulation has been adequate and thus to which federal regulation should not apply; (2) organization and dissolution over

which state regulation provides adequate protection; (3) deviation in loadings which are not applicable to insurance but where specification of loadings should apply in order that comparison of expenses can be made; (4) limitation of sales charges which should apply although recision of the contract by the insured should not; (5) redemption requirements which would destroy the insurance feature and should not exist; (6) part of the 1940 act regulation of underwriting contracts, which should be waived; (7) investment advisory contracts which are necessary and should be in writing, specifying fees and services to be rendered; (8) liability of contractholders, who should not be liable for the obligations of the account or the insurance company; (9) limitations on investments and transactions among the account, the insurance company, and other accounts, such limitations being advisable; and (10) disclosure requirements similar to the requirements of the 1933 and 1940 acts, which should apply to the insurance company.

All in all, the reviewer recommends that this treatise be a part of every actuary's library. While it may be felt that the text covers issues more commonly treated by the lawyer, it nevertheless raises questions which are food for thought for all who have an interest in equity insurance products.

IAN CHARLTON

The Railroad Retirement System: Its Coming Crisis, Report of the Commission on Railroad Retirement, June 30, 1972, pp. xvi + 570. (For sale by the Superintendent of Documents, Stock No. 5277-00001, $2.50.)

This particular report might be of more than casual interest to our profession for several reasons. First, there was an unusually large representation of actuarial talent on the commission's regular and advisory staffs (seventeen actuaries in all). Second, actuarial considerations received a great deal of emphasis, even though neither the commission members nor the executive director of the study were actuaries. Finally, the statement of the group of actuarial advisers in some respect transcends the area of railroad retirement proper. One might say, therefore, that parts of this report are a sort of actuarial case study which merits the attention of actuaries, including those who have no interest in the railroad retirement system per se.

The story of this report began in early 1970 when Congress had before it a bill (H.R. 15733) to increase railroad retirement benefits by 15 per cent in response to a similar increase in social security benefits which was enacted in late 1969. The report of the Railroad Retirement Board on that bill stated, among other things, that according to its actuaries the enactment of the bill would greatly increase the actuarial deficiency of the system.

As has happened on numerous occasions of this kind in the past, some proponents of the increase attempted to discredit the actuarial estimates and to substitute their cost-estimating "expertise" instead. An idea of the arguments used may be gained from the two quotations below, which were taken from the testimony of one such spokesman in the course of a hearing on the

above-mentioned bill (February 24–25, 1970, No. 91-41) before a subcommittee of the House Committee on Interstate and Foreign Commerce. Incidentally, it may be interesting to note that this witness was later appointed to serve as a public member of the Commission on Railroad Retirement. The quotations follow:

> Now I have disagreed with the actuaries of the Board since 1946 and the records of your committee will show that . . . in every instance they have been wrong and . . . that we . . . have been right [p. 48].
>
> I say to you that they [the actuarial estimates of the Board] are only allegations and we can prove them to be wrong [p. 49].

Apparently the pleas to disregard the actuarial estimates were not entirely successful, and the House inserted in the bill a directive for a study to be made by the board. The Senate went one step further and ordered a comprehensive study of the railroad retirement system to be made by a special commission composed of five members, three of whom were to represent the public and the remaining two railway labor and management, respectively. The commission began work in early 1971 and completed its assignment some seventeen months later. The report here discussed describes the commission's work in considerable detail and includes the recommendations of both the commission and its actuarial advisers.

Before we go any further, let us say a few words about the peculiar characteristics of the railroad retirement system and about the issue of dual benefits (as defined later) which was central to the commission's deliberations. As for the system, it serves a segment of private industry yet it is operated by the federal government. Railroad employment is not covered under social security (at least not directly), yet railroad retirement is so intertwined with social security that the latter's benefit and taxing provisions are by implication a part of the former system's law. Railroad retirement is presumably self-supporting, yet it derives a huge portion of its income from special arrangements with OASDI known as the financial interchange. (Through the end of 1972 the interchange, which by the way is completely equitable to OASDI, brought in $6.6 billion in actual money transfers.) In short, there is nothing comparable to railroad retirement on the pension scene of the country. The industrial pension plans provide benefits on top of social security and have no financial dealings with that system. Other plans, for example, federal civil service retirement, operate independently of social security (except for relatively minor points of contact) in the areas of both benefits and financing.

As for dual benefits, an adequate discussion of this issue is certainly beyond the scope of this review. All we will say here is that the term "dual benefit" refers to a social security benefit received by a railroad retirement beneficiary and that the presence of such benefits adversely affects railroad retirement through the financial interchange. The source of the difficulty is that OASDI benefits are heavily weighted in favor of individuals with only part-time

coverage. That this is so can be seen from the fact that a man retiring in 1973 (at age 65 and with maximum creditable wages during his period of coverage) on the basis of coverage in 1965–72 will receive 70 per cent of the benefit based on coverage during 1937–72, whereas the ratio of the lengths of coverage is about 22 per cent (8 to 36) and the ratio of creditable wages about 50 per cent. In terms of the financial interchange, railroad employment during 1937–72 without rights to a dual benefit could bring a reimbursement (to railroad retirement from social security) of $226.10 a month, while a history of railroad employment during 1937–64 and social security employment during 1965–72 would cut down the reimbursement to only $78.60, that is, the difference between the gross amount of $266.10 and the $187.50 actually paid by social security. Another undesirable feature of the dual benefits is that they create a privileged group of railroad retirement beneficiaries and thereby impede the equitable distribution of the benefit dollar.

In evaluating the merits of this report, it should be kept in mind that the commission had to work in a very sensitive area where powerful special interests exercise a great deal of influence. Certain influential parties had resisted the notion of any study and particularly of a study to be made by a specially constituted group. Then there was considerable pressure for limiting the study to fact-finding without recommendations, as was done in the early 1950's when a study was conducted at the request of Senator Paul Douglas. It is noteworthy and highly significant that such a course of action was not followed. The report is very outspoken, and some of the recommendations contained therein were not to the liking of certain people known in the past to wield a great deal of power in railroad retirement matters.

In a nutshell, the recommendations of the commission are as follows:

1. Railroad employment should be directly covered under social security, giving rise to first-tier benefits equal to regular OASDI amounts computed on the basis of railroad and nonrailroad service combined. The second-tier benefits would be based on railroad employment alone and would thus be similar to a benefit under a private pension plan.
2. Dual benefits should be eliminated except for a grandfather clause which would guarantee the already vested rights to such benefits.
3. Financing would present a problem only with respect to second-tier benefits. These should be financed on a fully self-supporting basis by contributions from the railroad community. (There is no recommendation regarding the respective shares of employees and employers.)
4. The restructured system should be so designed as to achieve an equitable distribution of the benefit dollars among the various groups of beneficiaries and to assure reasonable relationships of total benefits to wages in a dynamic economy.

It can easily be seen that each of the recommendations has elements of controversy, at least in regard to means of implementation. However, the first two reach to the very foundations of the railroad retirement system and were therefore the most controversial. What is involved here, among other things, is the issue of controlling the system through legislative influence and the attrac-

tiveness of dual benefits to those receiving them. Nevertheless, four of the commissioners, including the labor member, have expressed agreement—at least in principle. Only the public member previously referred to rejected all recommendations out of hand in the strongest terms. It is not surprising that in this commissioner's dissent (p. 42 of the report) we find the statement, "I cannot help concluding that this projection, and, necessarily, all projections associated with it and deriving from the same methods and assumptions, are sheer nonsense."

The actuarial advisers submitted a separate statement in which they expressed general agreement with the recommendations of the commission and advanced a number of recommendations of their own. The advisers call for closed-end valuations (without regard to future entrants), financing by means of normal cost plus amortization of accrued liabilities over a period of thirty years, valuations under both static and dynamic assumptions, and improved valuation reports. While the statement refers primarily to the future after the system is restructured, some parts of it imply criticism of the actuarial work done previously at the board.

This reviewer, who by the way is not exactly a disinterested party, by virtue of his having been the board's actuary until August, 1970, believes that the criticism is largely unwarranted and that some of the advisers' recommendations are highly unrealistic. This is not the place for a full discussion of the points involved, but a few comments may be in order.

1. There is nothing wrong with open-end valuations if the assumptions relating to future entrants are reasonable. After all, railroad retirement is a system with compulsory membership, and its termination is highly unlikely.
2. The language of the law implies static rather than dynamic valuations. Until the benefit provisions were changed to include elements of automatic adjustments for inflation (this had not been the situation prior to July, 1972), the valuations had to be under static assumptions. Dynamic assumptions could have been used only in exploratory cost estimates for a dynamic benefit structure but not in the valuations formally required by law.
3. The reliability of dynamic valuations may be more apparent than real. This is because of the great sensitivity of the results to the assumptions regarding future relationships between levels of wages and prices. Furthermore, one might question the reasonableness of traditional funding methods for a retirement system with flexible and largely undefined benefits. This is an area where an extension of present actuarial methods and practices may not make too much practical and economic sense.
4. Illustrative cost figures developed by the actuarial advisers for the second tier of benefits come to an average cost of nearly 22 per cent of taxable payroll over the next thirty years. Add to it the contributions for the social security tier of benefits (at least 9 per cent) and the financing of the railroad supplemental annuities (say, 2 per cent), and we are in the vicinity of 33 per cent of taxable payroll for pension benefits alone. This figure speaks for itself.
5. No one can quarrel with the premise that well-written and easily understandable actuarial reports are highly desirable. However, it would be naïve to think that the format of the report will have much bearing on its acceptability by the parties

concerned. Incidentally, during this reviewer's tenure at the board, there has never been a problem of not understanding the full implications of the valuations or cost estimates. The occasional unwillingness of certain parties to accept the results of valuations or cost estimates was a matter of policy which had nothing to do with the format or style of the reports.

In some respects the report seems like too much of a good thing. It has too much history, too-elaborate discussions of side issues, too many repetitions, and also too much technical detail. It also abounds with hindsight wisdom, especially in the parts which discuss the past work of the board's actuaries. Indeed, the length of the discussions on various topics was so great that the commissioners were unable to give them a sufficiently detailed review within the time allotted for the study. Thus we see in the report a rather curious statement that the commission is assuming direct responsibility only for the 29 pages which contain its summary and recommendations. (This part alone has been released as House Document No. 92-350.) The remainder of the report, over 500 pages, is presented as staff papers, the responsibility for which presumably rests with the executive director of the study.

The commission's staff was apparently so impressed with dynamic projections that it presented their results as newly found truth even when these results were substantially the same as those presented previously by the board's actuaries. It might also be noted that the commission's main recommendations closely parallel those previously advanced by the board's actuary in unpublished memoranda which were made available to the commission's staff. Having said all this, this reviewer hastens to add that all his critical comments pertain to relatively unimportant points. The main issue was to get across the message that the railroad retirement system will not be able to function much longer under the present structure. This the report has said in a voice loud and clear, and that is where its great merit lies. The study here discussed may well be a turning point for the better in the history of the railroad retirement system.

A. M. Niessen

*Robert Allen Marshall, *Life Insurance Company Mergers and Consolidations*, pp. 304, Richard D. Irwin, Inc., Homewood, Ill., 1972, $8.50.

This book is one of the Studies Series published by the S. S. Huebner Foundation for Insurance Education. As the title indicates, the book deals with merger and consolidation activities of life insurance companies, discussing the various advantages and disadvantages as well as describing very competently the problems encountered in this approach to corporate growth.

Mergers and consolidations are very similar activities in the area of corporate reorganization. Both processes involve a combination of two or more corporate entities into a single surviving corporate entity containing the assets, liabilities, and all the powers and rights of the previously separate corporations, and the resultant disappearance of one or more of the corporate entities involved. The single difference in these two activities is purely a legal one. A merger involves

the survival of one of the participating corporate entities, whereas a consolidation involves the formation of a new corporation which takes the place of the corporations being combined. The result, in a consolidation, is that both of the combining corporations go out of existence.

After presenting a brief history of merger and consolidation activity during the twentieth century, the book settles down to an analysis of the subject since World War II, dealing primarily with the period from 1956 to 1968. The author did a fine job of researching his subject. He quotes widely from various publications and speeches, and he has adequately footnoted these quotations.

To the actuary, Chapters 3 and 4, which deal with the characteristics of merger participants, may seem to be an overly long treatment of some obvious points. Chapter 5, entitled "Factors That Condition an Insuror for Absorption," is a good discussion of conditions within the life insurance industry that have led up to the great amount of merger activity over the last fifteen years.

Some of the more interesting information in this book is the result of questionnaires sent to companies that were involved in merger activity during the period 1956–1965. A more extensive questionnaire was sent to companies that were involved in three or more mergers. Chapter 6, which is devoted primarily to the results of the questionnaires, is particularly interesting because the author quotes management on what it was seeking in its mergers and how successful it was in achieving its objectives. This chapter contains much that has not generally been covered by other books and studies on this subject.

Two of the book's nine chapters are devoted to the ways to go about accomplishing a merger. The actuary should find these chapters of interest, since they present some of the problems of a merger in which he generally lacks expertise but of which he should, at the same time, be greatly aware. The author presents some of the considerations in the valuation of a company for merger in this section. Extensive quotations are made from papers in the *Transactions of the Society of Actuaries* by Melvin L. Gold ("Valuing a Life Insurance Company," Vol. XIV, Part I) and by Thomas P. Bowles, Jr., and Lloyd S. Coughtry ("Certain Actuarial Considerations in Determining Life Insurance Company Equity Values—Actuarial Note," Vol. XVII, Part I).

The questionnaire approach was used to compile information regarding the various state laws and regulations regarding life insurance company mergers and consolidations. While the author recognizes that his treatment is brief and refers the reader to more detailed legal analysis of the subject, the chapter devoted to regulations and laws serves as a warning to merger candidates of possible roadblocks or problems that will be encountered in accomplishing a merger.

Although, in the reviewer's opinion, too much of the book has been devoted to great documentation of less significant and perhaps even more obvious observations of such things as characteristics of merger candidates, the book presents much useful information both for those uninformed on the subject and for those who have been through the merger scene before.

GEORGE B. KYLE

*Sajjad A. Hashmi, *Automobile Insurance: A Long-Range View*, pp. xii, 214, Graduate School of Business, Division of Research, Indiana University, Bloomington, Ind., 1972.

This book is one of the Indiana University Sesquicentennial Series on Insurance, the volumes of which are intended to speculate about the future of insurance, extending to the beginning of the next century. The author of the book, who is professor of insurance at Ball State University, takes a broad approach to his subject, beginning with speculations about forecasting itself and continuing into speculations about future modes of transportation and the future environment for auto insurance, a review of the maze of problems and dissatisfactions which confront auto insurance, and various developments that may occur by the year 2000.

With respect to future modes of transportation, the possibilities of cars powered by electricity or steam are reviewed by the author, who notes that in 1910 about 650 Stanley steam cars were produced and that around 1900 there were more electric cars than cars with internal-combustion engines. The conclusion reached is that the internal-combustion engine will probably be with us for a long time. The author anticipates much greater reliance on mass transportation in congested urban areas but essentially sees the auto as continuing to be the predominant form of transportation in America, projecting more than double the current number of autos by the year 2000. The increase in the number of drivers is anticipated to be less, however, and the increase in the number of car owners even less, because of an increased use of rental and leasing arrangements. The resulting congestion is anticipated to be an adverse factor for auto insurance, but offsetting improvements in safety standards are hoped for, for highways, cars, and drivers alike.

The author refers to auto insurance as currently being in a state of a crisis. Public dissatisfaction is indicated as including, among other factors, insurers' current systems of classifying risks (particularly by age and geographic location) and cancellation or nonrenewal practices, delays in claim settlements, high premiums and low ratio of benefits to premiums, lack of universal financial responsibility, and insurer insolvency. Insurance industry dissatisfaction includes underwriting losses, political interference in rate increases, unfair claims arising from the contingent fee system and high jury awards, and unsafe cars and poor drivers.

The author believes that many of the problems arise from the tort system, within which auto insurance has existed. However, he sees, as one alternative, the possibility of evolutionary changes within the system to solve many of the problems. These include steps to bring about universal protection, less restrictive underwriting and a more "rational" (or socially desirable) classification system, increased use of deductibles (to reduce premiums), advance payment programs and mandatory arbitration in claims settlements, and open-competition rating laws.

Progress made toward formulation and enactment of no-fault systems is reviewed, including a dozen plans proposed (or enacted) by various states or

other sectors. These range from limited first-party no-fault insurance for personal injury only, to the complete personal protection plan proposed by the American Insurance Association. The author predicts that by 1985 a majority of states, and by 2000 most states, will have a no-fault system; some of these, however, would permit tort action above certain limits and for noneconomic loss. Under a complete no-fault system, with elimination of tort liability, the insurance becomes primarily one on medical payments and loss of income. Whether or not the benefits payable will be integrated with benefits payable by other health insurance becomes a critical question, and at one point the author expresses the hope that by the year 2000 auto insurance will be absorbed by other health insurance programs.

While he expects auto insurance eventually to be relegated to a secondary role, if not to disappear altogether, the author interestingly visualizes the auto insurers themselves as becoming more aggressive in changing the environment to conditions more favorable to insure, in areas such as driver education and car and highway design. He anticipates that life and health insurers will enter the auto insurance field and that the trend to conglomerates and congenerics will stimulate innovation in product design and merchandising; he expects that, by 2000, group merchandising and techniques of mass merchandising will dominate the auto insurance industry. These and other developments (including lower losses under no-fault systems, especially if benefits are reduced by benefits payable under other health insurance plans, as well as stress on rehabilitation, open-competition rating laws, and insurer-owned auto repair centers if legal) are expected to help improve the industry's profit picture. The author also envisions the development of a financial protection package which will fill the needs of a family unit for various insurance and financial services under one policy, including automobile, homeowner, and related coverages and life insurance and equity products. He envisions standardized policy provisions with very few options, to permit low-cost mass sales and handling.

All actuaries may be presumed to be concerned with health insurance developments and accordingly will be well advised to follow the developments going on in the auto insurance industry, particularly no-fault developments. For that purpose, this book will serve some and not others. The author uses a scatter-shot approach in developing his thesis, he tends to be repetitive, and the exposition overall is less than admirable. A report on the 1971 experience of the Massachusetts no-fault plan would certainly have added value to the book. The book is thought-provoking, however, and includes an extensive bibliography. As a bonus, one of the appendixes is a carefully prepared chart (credited to the Insurance Information Institute) summarizing and comparing the tort system with various no-fault plans.

EDWARD J. PORTO

*Charles D. Ellis, *Institutional Investing*, pp. xii, 253, Dow Jones–Irwin, Inc., 1971, $9.95.

This book, as noted in the preface, is designed to meet the needs of three categories of readers: professional investors; advanced students of business and

finance; and individuals responsible for choosing investment managers and setting investment policies for large pools of capital. The stated purpose of the book is to set forth an approach that will achieve superior investment results.

In an early chapter the author discusses the best ways of organizing investment management firms in order to maximize performance. He argues strongly in favor of relative freedom for individual investment managers, with few restraints imposed by investment committees.

The central portion of the book is devoted to a discussion of the three phases of portfolio management—policy, strategy, and selection. Policy sets the long-term posture of the portfolio in terms of the most suitable types of capital markets in which to invest. Strategy is concerned with the changing economic environment and ways to identify major areas of investment opportunities within the market. Selection deals with the buying and selling of specific securities at specific times.

The author recommends a policy with respect to three possible types of investments—bonds, cash, and equities. The suitability of bonds in a portfolio is shot down in rather convincing fashion by the following four arguments:

1. Capital is safer from inflation in equities than in bonds.
2. Equities produce much higher income (over the long run, when anticipated dividend increases are considered).
3. Equity income is more predictable (since the interest available on replacement bonds is so uncertain).
4. Equities increase capital substantially.

In similar fashion, the author discounts the value of cash in a portfolio when such holdings are for speculative purposes. The concession is made that cash may have a place for the purposes of operating transactions or precautionary disposition.

After summarily dismissing the merits of bonds and cash in a portfolio, the author proceeds to sing the praises of equities. The argument is perhaps somewhat exaggerated by the following statement of principle: "Optimum policy for the long pull seems clear: avoid bonds; concentrate on volatile stocks; and remain fully invested."

The purpose of strategy in portfolio management is to consider both the market and economic environments and to avoid potential problem areas while concentrating on areas of major potential opportunity. The development of strategy involves a consideration of all of the factors that have a bearing on price, including political, social, technical, and cultural considerations, as well as market and economic factors.

The selection of individual securities is the end result of several specific types of analyses which must be made by the portfolio manager. Five phases of investment analysis are noted: business analysis, financial analysis, market analysis, risk analysis, and opportunity analysis.

The author proceeds to give some helpful tips on how to select an investment manager, and then discusses three types of investment manager clients: endow-

ment funds, pension funds, and individuals. The chapter on the pension fund as a client discusses some of the actuarial considerations involved in the funding of pension plans. None of the author's remarks in this area would add to the knowledge of any of the members of the Society.

The concluding chapter of the book discusses the impact of institutional investing on the corporation and on capital markets. The author has the audacity to suggest, contrary to popular opinion, that institutional investors assist in producing a more "perfect" market. The "dumping" of stocks is considered a healthy sign, since prices reach their proper levels more quickly. No mention is made of the wild gyrations that have sometimes occurred in stock prices, as a result of institutional investors dumping a stock one week only to bid up the price the following week.

The book is well written and is particularly interesting because of the author's ability to draw controversial conclusions from investment history. However, it is of very little value to actuaries either in life insurance companies or in pension consulting capacities.

LEROY B. PARKS, JR.

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

John W. Florin, *Death in New England: Regional Variations in Mortality*, pp. viii, 172, University of North Carolina at Chapel Hill, Department of Geography, Studies in Geography No. 3, Chapel Hill, 1971.

This monograph examines selected aspects of the spatial and temporal patterns of causes of death in the six-state region of New England. It attempts to illuminate changes that a society undergoes as it moves from existence in a frontier wilderness to a high level of economic development.

The major part of the study is concerned with principal component analyses of mortality patterns that are not subject to clear interpretation. However, it was concluded that the suburban areas were the centers for changing mortality patterns, apparently sharing the economic and medical benefits of the cities without suffering the deleterious effects of the urban environment.

Samuel H. Preston, Nathan Keyfitz, Robert Schoen, *Causes of Death, Life Tables for National Populations*, pp. xi, 787, Seminar Press, New York and London, 1972.

For 180 populations (a population is an aggregation of individuals alive within some political boundary during some time period), beginning with only one in 1861, England and Wales, and growing to 42 in 1964, the following formats are presented:

(*a*) death rates from twelve causes in five-year age groups, (*b*) implications of these rates for the duration of life considering all causes acting in combination, (*c*) the chances of dying from a particular cause of death, and (*d*) the survivorship function that would have applied if a particular cause or combination of causes had been eliminated. Virtually all nations are represented every ten years, after having first appeared.

The four tabular formats described take up more than 90 per cent of the book. The remainder consists of several supporting tables and text that describes the classification of data procedures, gives computer programs in FORTRAN for each of the iterative cause-of-death life tables, discusses the accuracy and comparability of cause-of-death certifications in the several populations, and refers to the source of data, describing adjustments thereto, for each population.

Life Insurance and Annuities

George N. Watson, *The Elements of Group Insurance*, pp. 176, Institute of Chartered Life Underwriters of Canada, 41 Mesmill Road, Don Mills, Ontario, Canada, rev. ed., 1972.

This book was written for the Canadian life insurance agent and was based on notes and lectures delivered by the author over past years to the group sales staff and agents of the Crown Life Insurance Company, of which Mr. Watson is senior vice-president. The contents include a brief review of the growth of group life and accident and sickness insurance in Canada, a statement of fundamental principles, a description of the types of benefits written and types of groups insured, and a review of basic group master policy provisions, premium rates and underwriting principles, and installation and administrative procedures. There are chapters covering marketing methods, the role of the agent, and extension of group coverage to retired lives. In the last two chapters, concise summaries are provided of the provincial hospital plans and the provincial medical insurance plans. Examples of policy pages, administrative and claim forms, and so on, are liberally provided.

Health Insurance

Special Committee on Aging, United States Senate, *Health Aspects of the Economics of Aging*, pp. vi, 43, U.S. Government Printing Office, Washington, 1969.

Since a national health care program has not yet been enacted, the issues raised by this report, subtitled "A Working Paper in Conjunction with the Overall Study of 'Economics of Aging: Toward a Full Share in Abundance,' " is still of current interest. It was prepared by an advisory committee for the Subcommittee on Health of the Elderly.

Although many of the statistics are out of date, today's over-all conditions are similar enough to make the three-year-old comments of the advisory committee still relevant to the national health care debate. Medicare had been operating for three years, and its influence on many areas of medical economics was becoming evident, particularly with respect to physicians' and hospital fees and to hospital and extended care facilities.

The National Center for Health Statistics publishes "Vital and Health Statistics," a collective title which includes several series of reports, some of the more recently

published of which 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, *Work Injuries among Blue-Collar Workers and Disability Days—United States, July 1966—June 1967*, pp. 44, Data from the National Health Survey, Series 10, No. 68, Rockville, Md., February, 1972.

Statistics on the incidence of blue-collar workers injured at work and associated disability days by selected demographic characteristics. Based on data collected in household interviews during the period July, 1966—June, 1967.

U.S. National Center for Health Statistics, *Age Patterns in Medical Care, Illness, and Disability—United States, 1968-1969*, pp. 88, Data from the National Health Survey, Series 10, No. 70, Rockville, Md., April, 1972.

Statistics on the use of medical services and the extent of illness and disability in the population by age, with emphasis on the health status of persons aged 65 years and over. Based on data collected in household interviews during the period 1968–69.

U.S. National Center for Health Statistics, *Time Lost from Work among the Currently Employed Population—United States—1968*, pp. 44, Data from the National Health Survey, Series 10, No. 71, Rockville, Md., April, 1972.

Statistics on the number of days lost from work due to illness or injury among the currently employed population, by age, sex, residence, geographic region, educational attainment, family income, color, industry, occupation, and class of worker. Statistics on reimbursement of income for days lost from work for private-paid and governmental employees, based on data collected in household interviews during the calendar year 1968.

U.S. National Center for Health Statistics, *Home Care for Persons 55 Years and Over—United States, July 1966—June 1968*, pp. 39, Data from the National Health Survey, Series 10, No. 73, Rockville, Md., July, 1972.

Statistics on persons aged 55 years and over receiving care at home, by selected demographic characteristics, type of care received, type of condition, duration of care, and providers of care. Based on data collected in household interviews during the period July, 1966—June, 1968.

U.S. National Center for Health Statistics, *Periodontal Disease and Oral Hygiene among Children—United States*, pp. 28, Data from the National Health Survey, Series 11, No. 117, Rockville, Md., June, 1972.

Estimates of the Periodontal Index (PI) and the Simplified Oral Hygiene Index (OHI-S) for noninstitutionalized children aged 6-11 years in the United States, by age, sex, race, family income, education of head of household, and geographic region, and a correlation analysis of the interrelation of PI, OHI-S, and selected demographic characteristics.

U.S. National Center for Health Statistics, *Charges for Care in Nursing Homes—United States—April–September 1968*, pp. 57, Data from the National Health Survey, Series 12, No. 14, Rockville, Md., May, 1972.

Data on the lowest, most frequent (modal), and highest nursing home charges, by type of nursing service, type of ownership, bed size, region, medical services available, number of employees, and number of Medicare recipients. Comparison of charges for care in 1963 and 1968.

U.S. National Center for Health Statistics, *Utilization of Short-Stay Hospitals: Summary of Nonmedical Statistics—United States—1967*, pp. 45, Data from the National Health Survey, Series 13, No. 9, Rockville, Md., May, 1972.

Presents statistics on the utilization of short-stay hospitals, based on data abstracted by the Hospital Discharge Survey from a national sample of medical records of discharged patients. Discharges, days of care, and average length of stay are reported by age, sex, and color of the discharged patients and by geographic region, bed size, and type of ownership of the hospitals. Some comparisons of data for 1967 are made with those for 1965 and 1966 to identify changes in patterns of hospitalization after the institution of Medicare.

U.S. National Center for Health Statistics, *Leading Components of Upturn in Mortality for Men—United States—1952–67*, pp. 46, Data from the National Vital Statistics System, Series 20, No. 11, Rockville, Md., September, 1971.

An analysis of rising mortality among men, by cause, presented separately for white men and for men of other races.

Social Security

J. Douglas Brown, *An American Philosophy of Social Security*, pp. 244, Princeton University Press, Princeton, N.J., 1972, $8.50. Reviewed in *The Actuary*, October, 1972.

Benefit Loads in Relation to Coverage and Reserve for Railroad Retirement and Other Major Retirement and Social Insurance Plans, 1950–70, RRB Actuarial Note No. 3-72, April, 1972. Reviewed in *The Actuary*, May, 1972.

Walter W. Kolodrubetz, "Two Decades of Employee Benefit Plans, 1950–70: A Review," *Social Security Bulletin*, April, 1972, 35 cents. Reviewed in *The Actuary*, May, 1972.

Social Security Programs throughout the World, pp. xxix, 249, DHEW Publication No. (SSA) 72-11802, 1971, $2.25. Reviewed in *The Actuary*, May, 1972.

Occupational Differences in Separation Rates for Railroad Workers, 1965–68, pp. 39, RRB Actuarial Study No. 9, Office of the Chief Actuary, Railroad Retirement Board, Chicago, Ill. 60611, July, 1971.

This study presents data on the retirement, disability, mortality, and withdrawal experience of railroad employees by occupational groups during the years 1965–68. Similar studies for prior periods were presented in RRB Actuarial Studies Nos. 2, 5, and 8. Numbers of age and disability retirements were taken from universe counts,

while exposure was estimated from a cumulative 4 per cent sample. The number of employees in 155 separate occupational groups were shown for 1965 and 1968, together with the percentage change. Subsequent statistics are summarized by nine major occupational groupings and show the percentage distribution of railroad workers by age and service groupings, the distribution of new entrants by calendar year and occupational grouping, rates of early retirement by occupational grouping and age, rates of total disability (any job) and occupational disability (own job), together with the change in such rates from previous studies, and finally rates of withdrawal by calendar year since entry and by occupational group. All actuaries serving railroad clients will find this material most valuable. It should be noted, however, that rates of retirement, particularly those over 65, may well have undergone a sharp change since 1968 because of the eligibility requirements for supplemental annuities under the Railroad Retirement Act.

Railroad Retirement Disability Program, 1937–71, pp. 42, RRB Actuarial Study No. 10, Office of the Chief Actuary, Railroad Retirement Board, Chicago, Ill. 60611, June, 1972.

This monograph is one of a continuing series of technical actuarial studies released by the Railroad Retirement Board. Actuarial Study No. 10 describes the present disability provisions of the railroad retirement program and sets forth their historical development. Considerable statistical material relating to the program is then presented, breaking down disability retirement by age, impairment grouping, year of award, percentage of claims allowed, percentage granted a disability freeze, and so on. Crude rates of disablement are shown by occupational group, age, and length of service. The nine different disability tables used for the various past actuarial valuations of the railroad retirement system are listed along with comparative rates under OASDI, civil service, the UAW 55 Table, and group long-term disability experience. Mortality experience for disabled annuitants is developed, and the report contains the 1965 RRB Disabled Annuitants Mortality Table, the 1965 Totally Disabled Annuitants Mortality Table, and ratios of actual to expected mortality based on these tables broken down by age and duration grouping. The study contains a bibliography of Railroad Retirement Board and social security publications relating to disability, as well as pertinent general publications, including papers by Joseph Musher, A. M. Niessen, and J. L. Cowen.

Other Topics

Trusteed Pension Plans Financial Statistics, 1970, pp. 60, Statistics Canada, Labour Division, Pension Section, Ottawa, Ontario, Canada, January, 1972, $0.75.

This report provides data on the financial aspects of trusteed pension plans for 1970 and is the latest in a series extending back to 1957. The statistics are developed by an annual survey encompassing some 97 per cent of the trusteed pension funds as measured by assets. The statistics presented show the growth of trusteed pension funds, their income and expenditures, types of trust fund arrangements, investment patterns, type of assets held broken down by size of fund, and type of trustee valued at both book and market. Year-by-year figures are shown for the period 1960–70. These statistics present a fairly accurate picture of the general pattern of current investments and financial trends for trusteed pension funds in Canada as to both public and private sectors.

Kenneth E. Wheeler, Richard Gurman, and Dale Tarnowieski, *The Four-Day Week: An AMA Research Report*, pp. 41, American Management Association, Inc., 1972, $7.50.

This research report is based on a questionnaire survey addressed to 2,400 companies in AMA's General Management Division, which produced 800 usable replies, and a second questionnaire survey sent to 600 companies known to be operating on a rearranged workweek, which produced 250 replies. The survey was conducted in September, 1971. Of 138 four-day firms participating in the survey, 100 had installed the program in 1971. One hundred and twenty of these companies reported that both absenteeism and employee turnover were reduced. At the same time, a majority of the four-day companies reported that the longer workday is more tiring, so that the long-range prognosis may be for a four-day, thirty-two-hour week. The pension actuary will find this research report of modest value in his reappraisal of the employment characteristics of a group which has adopted a four-day week and in his selection of the most appropriate actuarial assumptions. More definitive figures are going to be necessary in the long run.