BOOK REVIEWS AND NOTICES *

Build and Blood Pressure Study, Volume I, pp. 268, compiled and published by
the Society of Actuaries, Chicago, Ill., October, 1959.

This is the first volume of a report of the only intercompany investigation
of the effect of build on mortality in over a quarter of a century, and also the
only one on the effect of blood pressure since the Blood Pressure Study, 1939.
It studies not only the effect of each of these two major causes of rating sepa-
rately, but also the mortality associated with various combinations of build
and blood pressure. In volume of data it is the largest study of mortality fac-
tors yet made: the build study included 4,900,000 policies, with an average
exposure of 7.8 years, and 133,000 policies terminated by death; for the blood
pressure study the respective numbers were 3,900,000, 7.2, and 102,000.

The tables in this volume are confined largely to mortality ratios and num-
bers of deaths. More detailed data will be included in the second volume, to be
published in 1960.

The investigation related to Ordinary medical issues of 1935 through 1953,
on residents of the United States and Canada, observed through 1954 anniver-
saries. All policies which would have been issued substandard for any reason
other than build were excluded from the build study; and similar exclusions
were made for the studies of blood pressure and of the combinations of build
and blood pressure. Cases with impairments classed as minor, *i.e.*, rated at least
+10 but less than the maximum rating eligible for standard insurance, were
studied separately. War deaths, and deaths from accidents and disease related
to war service, were excluded. The experience is by number of policies.

Twenty-six companies, representing 65% of the Ordinary insurance in force
in United States and Canadian companies on December 31, 1954, contributed.

A feature of the report which is of considerable public interest is a new table
of average weights by height and age. To make this representative of all lives
newly insured during the period covered by the study, data were included for
a sample of cases which had been eliminated from the mortality experience
because of ratings other than for build or blood pressure. In general, the average
weights for men are higher, and those for women lower, than those found in the
Medico-Actuarial Mortality Investigation and in the Medical Impairment
Study 1929.

As a standard, a Basic Mortality Table was prepared from the intercompany
experience on Ordinary medical issues of the period covered by the study.
Necessarily this table is based on amounts of insurance, and on male and female
lives combined. The mortality ratios for males on the Basic Table are slightly

* 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*.

higher than would be found by using a standard based on male lives alone. To permit a comparison of female mortality with that of average female lives, a table of mortality ratios of standard female risks to the Basic Table is given, and comparisons with average female mortality are made in the comments on the various classes.

A standard distribution of causes of death was also prepared from the experience of nine companies on standard issues for the issue and exposure years covered by the study, treating males and females separately. The topics studied were as follows:

Build
    Experience by age at issue
    Experience by duration
    Experience by cause of death
    Comparisons with earlier build studies
    Experience on weights over 254 pounds
    Experience with specific minor impairments
    Experience on overweights who reduced

Blood Pressure
    Experience by age at issue
    Experience by duration
    Experience by cause of death
    Comparisons with earlier blood pressure studies
    Experience on diastolic pressures 103–112mm.
    Experience with specific minor impairments
    Experience on entrants with favorable electrocardiogram
Build with Ratable Blood Pressure
Blood Pressure with Ratable Build

How does the report change conclusions drawn from previous investigations? As to build, it appears that more mortality ratios are increased than are decreased, but the pattern is not uniform. The changes are relatively small on the whole. Comparison is made with the Medico-Actuarial Investigation (M.A.M.I.), which dealt with issues of 1885 to 1908 observed to 1909 anniversaries, and the Supplement to the Medical Impairment Study 1929 (M.I.S.) which covered issues of 1885 to 1927 observed to 1928 anniversaries.

The mortality ratios of tall underweights have improved markedly since M.A.M.I. For overweights, mortality ratios have generally decreased for tall men and increased for short men. In M.A.M.I., ratios increased with height except at the highest ages; in M.I.S., they did so up to about age 40; in the present study they generally decrease with height. For overweights, the increase in ratios by duration in the present study is less than in M.A.M.I. No comparison was attempted for female lives.

Ratios for males were over 125% for young underweights, short underweights at high ages, and those with marked overweight at all adult ages. For females the ratios for underweights were favorable when measured against average female mortality, but for overweights they were at about the same level as

for males of the same percentage excess over average weight. For extreme over-weights the ratios were generally little higher than for the next lower groups, indicating that those accepted had been selected very carefully.

The presence of a minor impairment increased the ratios for males by an average of 25 percentage points. This would indicate either that some of the "minor" impairments should have been regarded as ratable, or that the aggregate effect of abnormal weight and the minor impairment is greater than the sum of the amounts of excess mortality for each separately. For females, however, the increase was only the small amount that would have been expected. Most of the increase for males was due to moderately high blood pressure as the minor impairment. These facts are consistent with the finding that, for males, considerable excess mortality is associated with blood pressure which is only moderately excessive. Confirmation is added by the fact that for males with a given blood pressure reading, the average mortality added by a minor impairment is only 17 percentage points.

Lowest mortality is associated with weight somewhat below the average, except in the case of young males, and also with blood pressure below the average.

By duration, the mortality percentages of underweights without minor impairment decreased, while those with minor impairment tended to remain level. For males with slight overweight and no minor impairment, ratios by duration were level, but increased when there was a minor impairment. For the corresponding females the trend was downward at ages below 40, with no pattern at higher ages. For males with moderate or marked overweight, and for the corresponding females at the higher ages, the trend was upward.

By cause of death, the high mortality rates of overweights were due largely to high ratios of actual to expected deaths from cardiovascular-renal diseases, diabetes, and diseases of the digestive system. The greatest number of excess deaths was from heart disease, but the ratio of actual to expected was highest for diabetes. The ratio for tuberculosis was very low.

As has been stated, the excess mortality of entrants whose blood pressure reading was such as to be considered a "minor impairment" in the build study was substantial. This was also true for male, but not female, lives where the minor impairment was either a family history of cardiovascular-renal disease or albuminuria and for female, but not male, lives where it was a circulatory impairment other than rapid pulse or functional heart murmur. This was generally the case even for those of average build. However, it was not so in either sex for these last two circulatory impairments, or for digestive disorders, nervousness, or genito-urinary disorders other than albuminuria. In most cases where the excess mortality associated with a minor impairment was high, the proportion of deaths from heart disease was also high.

An interesting analysis was made of persons rated for overweight who became eligible for standard insurance following reduction in weight. Their mortality was substantially lower than that of all entrants in the main study with the same weights at issue. While their ratios were over 130% when measured by

duration from date of change, it is probable that less rigid underwriting standards were applied to them than to new applicants; their average mortality was practically normal when measured from original date of issue.

Comparisons between the results of the new study and those of the Blood Pressure Study 1939 showed that the mortality ratios for blood pressures slightly above average are generally much higher in the present study. Another notable difference was that, while in both the 1939 study and the M.I.S. the mortality ratios in classifications with elevated blood pressure increased with duration, the present study shows higher ratios in the first five durations than thereafter; an exception is found for the very high blood pressures.

In the classes with blood pressure above average, the proportion of deaths from cardiovascular-renal diseases is high and increases with rise in blood pressure. The proportions due to digestive diseases, pneumonia and influenza, and diabetes are also high, but do not increase with rise in blood pressure. The extra deaths from all these causes may be related to the association of elevated blood pressure with overweight.

In the blood pressure study, the excess mortality in classes with minor impairments was on the average little greater than would be expected from the minor impairment alone. There were instances, however, where this was not true, especially at the higher blood pressure readings. The same minor impairments as in the build study, and also moderate overweight in the case of males, tended to be associated with excess mortality.

Entrants with a favorable electrocardiogram had distinctly lighter mortality than the average of all risks with the same blood pressure. In this class the mortality averaged less than 100%, and was actually less for those with minor impairments than for those without them. These risks were obviously very carefully selected. The light mortality was especially marked where there was also a favorable chest X-ray.

Mortality was also studied according to build for risks with ratable hypertension, and according to blood pressure for risks with ratable build. In each case the excess mortality was greater than the sum of the excesses that would have been attributed to the build and the blood pressure separately. In the case of ratable blood pressure this was especially true at the younger ages; and in the case of ratable build it was especially true at moderate degrees of overweight.

<div align="right">JAMES E. HOSKINS</div>

*D. M. McGill, *Life Insurance*, pp. xxi, 847, Richard D. Irwin, Inc., Homewood, Ill., 1959.

This book, intended as a college text for students of life insurance, is comprehensive and well-written. It should admirably fulfill its purpose.

The book is divided into eight parts. Part 1 discusses the need for life insurance and comprises an excellent introduction both to the Huebner life value concept of measuring the money value of a man and to the more useful "needs" approach, which calculates the amount of insurance a man should buy by de-

termining the needs of his family for subsistence, a clean-up fund, education, mortgage redemption and emergencies. Key-man insurance and other business uses of life insurance are discussed much earlier than is the case in most text-books. Part 1 also introduces the level premium concept, contrasts permanent insurance with yearly renewable term, and initiates the reader to the meaning of the policy reserve.

A discussion of the various types of insurance contracts makes up the five chapters in Part 2. Part 3 contains 230 pages which explain mortality tables, interest rates, premiums, reserves, cash values and dividends. Thus the book allocates nearly a third of its text space to the purely actuarial aspects of life insurance, a practice quite rare among life insurance textbooks, particularly when the author is not an actuary. The examination of mortality tables, net premiums and reserves is quite thorough, with many numerical examples, com-parisons of reserves on different mortality and interest bases, and numerous charts and graphs which clarify the principles explained. Most college teachers of insurance find the arithmetic of life insurance the most difficult portion of the subject to explain to the students. Dr. McGill's lucid and complete presenta-tion should aid them immensely.

Occasionally the author allows himself to slip into inaccuracies through a desire for generality. For example, in chapter VIII he says: "All mortality tables used for the calculation of life insurance premiums are ultimate tables." In chapter XVII he states that: "Most companies, however, stipulate that an election to apply the dividends to the purchase of paid-up additions must be accompanied by evidence of insurability if made at any time after the policy has been issued." Such a practice would, of course, be prohibited by the New York insurance law. It also seems doubtful whether it was necessary to include the detailed discussion on pages 154–155 of the construction and background of Table X_{17}, in view of subsequent developments, and the chapter on modified reserves contains more information about the Illinois Standard than can be absorbed by most students in college.

The two chapters on surplus distribution seem much too detailed in a book intended to be understood by college students. The 35 pages devoted to this subject include, besides a lengthy analysis of the contribution method, a dis-cussion of the experience premium method and a much too brief mention of termination dividends. Many details are included which are of interest only to actuaries and are of doubtful intelligibility to the college student, such as an analysis of whether the initial or the mean reserve should be used in the three factor dividend formula. There is also a lengthy examination of the merits of using a dividend interest rate based on assets or interest-bearing liabilities, and a discussion of how capital gains should be reflected in the interest rate. While Dr. McGill has apparently studied Maclean and Marshall's *Distribution of Surplus* quite thoroughly, these two chapters would have been much improved had Mr. Jackson's new paper on dividends been available.

Part 4 of the book deals with underwriting and reinsurance, while Part 5

devotes 200 pages to the legal principles basic to life insurance and to a study of policy provisions. Part 6 discusses settlement options and their use in insurance programming, while Parts 7 and 8 cover group and industrial insurance, disability and double indemnity riders, and insurance regulation. These parts of the book are quite well done and contain a wealth of valuable information.

A comparison of Dr. McGill's book with Maclean's *Life Insurance*, now in its eighth edition and considered the "bible" by many actuaries, reveals some important differences in emphasis. Maclean devotes two chapters to life insurance investments and the annual statement, as well as a chapter each to fraternal and savings bank life insurance. All four subjects are completely absent from McGill's book and the two latter topics are not even mentioned in the index. National Service Life Insurance is another conspicuous absentee from McGill's book, while Old-Age, Survivors, and Disability Insurance is rather skimpily treated.

On the other hand, the two first chapters, explaining how to analyze life values and insurance needs, are excellent, and these are not to be found in Maclean. Dr. McGill's Part 6, which demonstrates the use of settlement options in estate planning, is also unique and is very well written and illustrated. A notable feature of the book by McGill is the lengthy treatment, covering 183 pages, of the legal aspects of life insurance; this is subtantially more than most other texts devote to this subject.

While I doubt that Dr. McGill's book will replace Maclean on the actuary's bookshelf, it may well earn a place beside it. In any case, it deserves to become one of the foremost college textbooks on life insurance, as well as an excellent reference for agents and others who desire a semi-technical understanding of the insurance business.

ALLEN L. MAYERSON

*Ernst Zwinggi, *Versicherungsmathematik*, pp. 258, Birkhäuser Verlag, Basel, 1958, second and enlarged edition.

This book is a compact treatise on practical life insurance mathematics. In its 258 pages and 651 numbered formulas, a very wide range of applications of mathematics to life insurance is covered. Because the book's objective is to provide tools for the practicing actuary, the treatment is mainly discrete, but a new part has been added on the continuous method.

The book is divided into eight parts. The first of these deals with the basic factors which are used in actuarial calculations. There is a short chapter on compound interest theory. This is followed by a chapter on single and multiple decrement tables and includes discussion of forces of decrement, dependent and independent probabilities of decrement, and the construction of tables therefrom, including combined tables in the sense of Jordan's Chapter 16. There is, however, no mention of central rates and their convenience as a bridge between dependent and independent rates. The last chapter of this part gives a brief discussion of the expense factor.

The second part is entitled "Equivalence Principle and Concept of the Reserve." On a discrete basis, there is discussed the equation of value between premiums and benefits for general insurances in respect to single and multiple causes of decrement, and the prospective and retrospective reserves are defined. Also included are a recursion formula (of Fackler form) for the reserve and an exposition of Cantelli's reserve theory. These first two parts of the book provide a general foundation for the later applications.

The third and largest part of the book concerns insurance on a single life. Select, aggregate and ultimate mortality tables and the basic mortality functions l_x, q_x, μ_x and $\overset{\circ}{e}_x$ are discussed. A quite comprehensive review of mathematical laws of mortality is given but it does not include reference to T. N. E. Greville's recent paper, "Laws of Mortality Which Satisfy a Uniform Seniority Principle," *JIA* LXXXII, 114. The next sections are devoted to net premiums for both common and special forms of insurance, to sufficient premiums (which provide for benefits and expenses), and to gross premiums (with provision for benefits, expenses, contingencies and surplus). Included here is a new section on extra premiums for substandard mortality with a reference to the paper by W. Shur, "A General Method of Calculating Experience Net Extra Premiums Based on the Standard Net Amount at Risk," *TSA* VI, 99, and the contribution to it by E. Steinberg. In addition, premiums are developed by various methods for disability insurance. There follow sections on net premium reserves, on sufficient reserves of which special cases are what we would call modified reserves, and on complete reserves taking into account all elements of the gross premium. The reviewer would prefer to see formulas for premiums and corresponding reserves in closer juxtaposition so that the relationship between premium patterns and reserve patterns may be fully exploited. One might also quibble about the author's use of P_x to denote the net level annual premium for any form of insurance issued at age x.

Next comes a thorough discussion of exact and of approximate valuation procedures. Among the former is included the attained age valuation method, and in the latter the Lidstone Z-method, and more recently developed approximate methods. There is a section on nonforfeiture values which in regard to reduced paid-up insurance has a formula that includes direct allowance for future expense. The last chapter of this part deals with the analysis and distribution of surplus. Two distribution systems are considered: the natural system (contribution plan) and mechanical system, one application of which would be a reversionary bonus plan.

The subject of the fourth part is insurance with average contribution or premium determined on the basis of closed or open groups of insureds. The aggregate funding method for pension plans is a related concept. Apparently such average premiums were used for a form of group insurance developed in Europe, but they might also have application in social insurance and other situations where individual equity is not a primary consideration.

The fifth part deals with insurances on several lives. The treatment is prac-

tical in two ways: much of the discussion is limited to the two lives case, and in the second chapter, widows' and orphans' pensions are discussed. Formulas for widows' pensions are given for both the individual (reversionary) method and the collective method, while the collective approach is advised for orphans' benefits. In this latter case, the formulas make liberal use of averages and might be refined by use of "average family annuity" as indicated on p. 162 of Crabbe and Poyser's text, *Pension and Widows' and Orphans' Funds*. As a final comment on this part, it may be remarked that contingent insurances receive minor and somewhat awkward treatment, since continuous functions are not used.

Part 6 is new in this edition and gives an outline of the continuous method. The author points out that this method may be realistic in regard to death benefits but not in respect to premium and other annuity payments. He mentions its value for theoretical investigations and, as one indication of the practical possibilities, has a reference to J. M. Boermeester's note, "Certain Implications Which Arise When the Assumption is Made That Premiums Are Paid Continuously and Death Benefits Are Paid at the Moment of Death," *TASA* L, 71. To illustrate the method, an endowment insurance with immediate payment of death benefit and apportionable annual premium is related to a similar insurance with premiums payable continuously, and conditions for equality of reserves for the two insurances are obtained.

The next part deals with variation in the basic assumptions but is not concerned with Lidstone's theorem. Instead the first chapter discusses methods of projecting mortality rates to allow for improving mortality, and contains reference to the work of Jenkins and Lew, and to Sternhell's procedure for calculating approximate annuity values based on projected rates. A second chapter takes up the variation of life annuity values with change in the interest assumption. Here appears Poukka's formula for the value of a_x' at interest rate $i' = i + h$ in terms of a_x and other functions at rate i, namely,

$$a_x' \doteq a_x\left[1 - \frac{v\,h\,S_{x+1}/N_{x+1}}{1 + .84\,v\,h\,S_{x+1}/N_{x+1}}\right].$$

The remaining chapter discusses the effect of variation in the probability of becoming disabled in the case where such probability is given by a Makeham formula $a + \beta c^x$ and the parameters a, β and c are varied.

The eighth, and last, part is a brief exposition of graduation. Polynomial fitting by least squares or moments is carried out by use of orthogonal polynomials. Various processes for graduation by a Makeham formula are given. Adjusted average and interpolation methods are also touched upon. There is reference to but no discussion of the difference equation method. There is no reference to the notable work of Greville on osculatory interpolation, of Beers, Greville and White on other subtabulation methods, of Greville and Vaughan on the graduation operators corresponding to interpolation formulas. While much of this work is beyond the day to day needs of practical actuaries, some of it has been put in very convenient form for practical use—for example, in

the papers of Beers and Greville in *RAIA* XXXIV, and in Greville's "Tables of Coefficients in Adjusted Average Graduation Formulas of Maximum Smoothness," *RAIA* XXXVII. In any event, the very extensive bibliography at the end of the text might well include reference to the outstanding work of these men.

This bibliography, of more than 300 items classified by subject, is a valuable supplement to the text. Included are references to works of approximately twenty Society members. To some extent the bibliography serves the purpose of indicating variations and additional developments that might otherwise be brought out by problem sets. The book itself does not contain numerical examples, problem sets or tables, and some readers might deplore their absence. However, a number of graphs of actuarial functions appear and are useful illustrations.

Undoubtedly this book is the fruit of wide reading and experience in insurance mathematics. It contains an extensive set of mathematical tools for the practicing actuary, and has some information on almost all types of mathematical problems the actuary may encounter. One notable exception is in regard to the theory of risk, but an adequate covering of this topic might not be consistent with the practical objectives of the text. For Society members, the book may be useful as a reference, and of interest for the insight it provides to European actuarial thought and practice. Those who are interested might well consult the reviews of the first edition (1945) by H. W. Haycocks in *JIA* LXXIII, 166, and S. Vadja in *JIASS* VI, 149.

<div align="right">CECIL J. NESBITT</div>

O. D. Dickerson, *Health Insurance*, pp. xvi, 500, Richard D. Irwin, Inc., Homewood, Ill., 1959.

This book, intended for use as a college text, helps meet a long-evident need for a comprehensive treatment on the current status of health insurance. It provides a valuable introduction to a rapidly growing field and helps the specialist by a detailed bibliography at the end of each chapter. The content of the volume suggests a prodigous amount of research by the author.

The first three chapters of Part I review the impact of medical expenses and time lost because of ill health on both society and the individual wage-earner. These chapters are among the best in the book and include much material with which the actuary may not be familiar. The fourth chapter, which serves as an introduction to the remainder of the book, covers legal principles as well as a discussion of the form of the insurance contract, waiting periods, benefit maximums and the definition of disability. In addition to tables showing the amount and distribution of medical care expenses, the number of persons disabled by specific diseases, and the number of people covered by various types of health insurance, there are many other useful data. With very few exceptions, the statistical illustrations are well chosen; one notable exception is the comparison,

on page 52, of the expectation of life of such a miscellany as the American Experience, American Men, CSO, *a*–1949 and U.S. 1949–51 tables.

Part II has three chapters covering, respectively, hospital, surgical and medical, and major medical insurance. Part III, which is devoted to loss-of-time benefits, has six chapters, one each on commercial policies, noncancelable contracts (called guaranteed renewable by Dr. Dickerson), life insurance disability riders, limited and industrial policies, group loss-of-time benefits, and social insurance. Each chapter of Parts II and III ends with a section which explores controversial questions and current problems in the particular area of health insurance, which is followed by a useful summary.

Although the comparison between insurance companies and Blue Cross plans in the chapter on hospital insurance is worthy of note, more could have been said regarding problems and issues in the chapter on major medical and comprehensive insurance. A later edition might give a fuller treatment to guaranteed renewable contracts, which are here discussed only in connection with loss-of-time benefits and without mention, beyond a footnote, of their role in hospital and medical expense insurance. There is left the implication, contrary to the situation, that guaranteed renewable contracts where the company reserves the right to increase premiums are common in the loss-of-time field. The chapter on commercial policies has only a limited discussion of waiting periods or of schedule policies which offer the applicant a choice of waiting periods and maximum benefit duration. These are matters of extreme importance in connection with premium rates. Here, as in other parts of the book, illustrative premium rates would have been very helpful.

The discussion of social insurance is quite detailed and includes some good material on Workmen's Compensation insurance. However, this is followed by a discussion of the actuarial solvency of the Old-Age, Survivors, and Disability Insurance system which is somewhat superficial and likely to confuse the student of health insurance. There is also a discussion of private pension plan funding which is of doubtful relevance either to health insurance or to social insurance. The most important social insurance benefit in the area covered by the book, the OASDI disability income after age 50, should have been treated more fully. For example, the question of the administrative determination of disability and its effect on costs is not discussed, nor is the fact that the maximum family benefit payable under OASDI in case of disability exceeds the maximum payable under Workmen's Compensation in all but three or four states. Indeed, the opposite impression is given by the statement that "Workmen's Compensation benefits may range as high as $150 a week." The fact that this ceiling exists only in Arizona and that three-fourths of the states, including most of the industrial areas, allow a maximum benefit of less than $45 per week, is not made clear.

Part IV is concerned with the operations of the health insurer, namely underwriting, rate-making, reserves, claims, distribution, and regulation. The chapters on rate-making and reserves, probably the most interesting to the actuary,

are somewhat uneven in quality. The chapter on reserves is a concise, well-written summary of the various types of reserves held on both cancelable and noncancelable health insurance contracts, but unfortunately includes some actuarial inaccuracies. The formula $_nV_x = A_{x+n} - P_x \cdot \ddot{a}_{x+n}$ and another formula derived from it (with typographical errors) are inapplicable to health insurance as they stand, yet they are carefully set down and discussed. No attention is given to the work of Task Force 4 in preparing tables for valuing hospital and surgical policies.

There are some further discussions of a technical nature that are more appropriately handled in the Society's textbook for actuarial students. The last three chapters on Claim Administration, Distribution, and Regulation provide valuable introductions to these important aspects of the health insurance business. The appendixes include the 1950 Uniform Provisions Law and other material valuable for reference purposes.

Despite these criticisms, the book represents a work of real scholarship. It is a volume which should have a place on the bookshelf of every actuary and college instructor concerned with health insurance.

<div align="right">ALLEN L. MAYERSON</div>

*B. J. Darsky, N. Sinai and S. J. Axelrod, *Comprehensive Medical Services under Voluntary Health Insurance: A Study of Windsor Medical Services*, pp. xvii, 392, Harvard University Press, Cambridge, Mass., 1958.

O. W. Anderson and P. B. Sheatsley, *Comprehensive Medical Insurance—A Study of Costs, Use, and Attitudes under Two Plans*, pp. vi, 105, Health Information Foundation, Research Series 9, New York, 1959.

P. M. Densen, E. Balamuth and S. Shapiro, *Prepaid Medical Care and Hospital Utilization*, Hospital Monograph Series No. 3, pp. 55, American Hospital Association, Chicago 10, Ill., 1958.

These reports present the findings of specialized studies on three well-known comprehensive medical prepayment plans made available on a group enrollment basis—the Windsor Medical Services, Incorporated (WMS) of Windsor, Canada; the Health Insurance Plan of Greater New York (HIP); and Group Health Insurance, Incorporated (GHI), also of New York.

The WMS report, financed by the Health Information Foundation, is of more than ordinary interest to actuaries concerned with the problems of determining the cost of comprehensive medical care. Some very interesting comparisons may be made with the HIP and GHI reports regarding the techniques utilized and the conclusions drawn. The authors of the WMS report, members of the Bureau of Health Economics of the University of Michigan, had been engaged in annual analyses of WMS experience in association with the Essex County Medical Society in Ontario, Canada, but felt that these studies "provided an inadequate view of the whole plan and left many pertinent questions unanswered." Accordingly, they sought answers to such questions as: "Can a plan which includes home and office care on a fee-for-service basis be actuariallv

sound?" and "Will it be necessary or possible to control potentially excessive demands by subscribers?"

The data for the WMS study were obtained from 1,345 interviews made in early 1955 concerning experience during 1954, and from questionnaires returned by 204 physicians during the summer of 1955. The authors note that 60 percent of the population in the Windsor area were enrolled when the study began, the proportion rising to 85 percent by the end of 1955. The sample is intended as a cross section of the WMS enrollment. However, since the desiderata were with respect to utilization, cost, and attitude, it would appear that like-sized samples with respect to age, sex and insured status, along the lines of the study reported by Anderson and Sheatsley, might have been more effective in providing reliable data. The standard errors of the utilization rates derived from the samples should be kept in mind in evaluating the insurance aspects of the results. The authors were apparently more concerned with "administrative soundness" and "optimum social utility."

Although the authors found inaccuracies in the returned questionnaires that made it impracticable to tabulate the costs of surgery and in-hospital care, it might have been a simple matter to obtain exact information from the 204 physicians.

Comparison of the three reports shows that the rates of out-of-hospital utilization of WMS subscribers were about the same as those for HIP and GHI subscribers in New York City. However, the experience of WMS subscribers was considerably higher than those in the same area with other or no form of insurance coverage. This may reflect a relatively high utilization of hospital-related care on the part of WMS subscribers; this may be indicated by observing that the WMS hospital admission rate is almost double that of New York Blue Cross subscribers, as shown in the third report cited above. Table D-7 of the Appendix of the WMS report is valuable for its utilization rates by age and sex, separately for WMS subscribers, for subscribers to other plans and for those with no coverage. A misprint will be found in the table in the average for "other" subscribers; a corresponding figure of 4.41 is found in Table 5, page 77.

There are many who would disagree with the conclusions of the authors "that no actuarial difficulties would be encountered in enrolling this group (employed persons in groups of fewer than 10, including self-employed, and their dependents)." A further conclusion, with regard to experience rating, that "The differential pricing of premiums, whereby the cost of protection is lowered for select or favorable risk groups and raised for subscribers in unfavorable risk groups, is socially unsound. . . . Experience rating or discriminatory pricing of premiums means that favored groups in the community obtain a valuable social service *at the price of* disenfranchising other groups from that service at the same premium," might be particularly interesting to many group insurance actuaries. The WMS report is worth a careful reading, not only for the cost data on out-of-hospital medical care coverage, but also for the insight afforded into the basic concepts of the authors with respect to actuarial feasibility.

The study by Anderson and Sheatsley compared subscriber attitudes, utiliza-

tion and costs of service between HIP and GHI. HIP provides medical care
without direct charge through 31 panel groups that are reimbursed on a per
capita basis; GHI permits enrollees a free choice of physicians and makes re-
imbursement on the basis of a payment schedule for each type of service actual-
ly rendered. For the purpose of the study, conducted by the National Opinion
Research Center, a sample was taken of the subscribers in each plan enrolled
from three trade unions whose members were offered a "dual choice" of plans.
Subscribers to both plans received identical hospital coverage through Blue
Cross. The samples from each plan were selected so as to be matched exactly
with regard to age and sex and to consist of 100 office workers, 200 machinists
and 100 ladies garment workers. Since the latter made up three fourths of the
total enrollment and were mainly females above age 40 without dependents'
coverage, disproportionate samples were needed to obtain the views of male
workers with dependent wives interested in prenatal or pediatric medical care.

In order to provide a background for the survey of the enrollees' attitudes
toward their chosen plan, data are presented regarding the average cost of
medical service as well as rates of utilization. It was found, in these specialized
samples, that HIP paid about 80 percent of the total cost incurred by its en-
rollees while GHI paid only 59 percent of the total physicians' charges. While
the average over-all gross cost per individual was slightly higher for GHI than
HIP, there was no significant difference in the cost of physicians' service be-
tween the two plans. However, these findings apply only to the specially
selected samples and are not necessarily indicative of what would be found in a
cross section of the actual membership.

The nonsurgical, nonobstetrical physicians' service was estimated at $5 per
person less for GHI than for HIP, indicating that the higher total cost for GHI
lives ($154), as compared with that for HIP lives ($139), was due entirely to
hospital and surgical care. The authors point out that HIP covered a higher
percentage of total costs than GHI "because the GHI subscribers had higher
hospital and surgical costs." The detailed data in Tables 7 to 17 will be found
of interest to actuaries concerned with distribution of cost by size and nature
of service. This is especially true with regard to expenditures for dental care.

The peculiarly low hospitalization and hospitalized surgery rate shown for
HIP enrollees in this sample is emphasized in tables where comparisons are
made with several other recent studies. The HIP admission rate of 6.3 per 100
lives included 4.3 surgical cases. An even lower rate is shown for the office em-
ployees union in HIP (p. 101), perhaps reflecting the wide variation possible
in a small sample. The authors warn against drawing "any generalizations or
conclusions from these variations," and discuss on page 38 some questions that
might be raised as to the availability of hospitalization for patients of HIP
physicians. They indicate that still lower rates result when the figures for
"white, non-Caribbean" are segregated.

As made clear in the third of these reports, HIP enrollees were treated for
some ailments without recourse to hospitalization and had a much lower over-
all admission rate. Nevertheless, the proportions in both the HIP and GHI

samples that believed their health was good or excellent were virtually the same. A large proportion of HIP enrollees had previous experience with clinics and indicated no dissatisfaction with such attention.

The very comprehensive interviews evaluated in this survey indicated very definitely that the GHI enrollees were primarily interested in "free choice of physician" (72%), while 40 percent of the HIP enrollees made their choice on the basis of "nothing to pay." The HIP enrollees had a generally better knowledge of the details of their plan than those of GHI, but a higher proportion of the GHI enrollees, and their spouses, expressed satisfaction. Both groups indicated a desire for more complete coverage, particularly the inclusion of dental care.

In summarizing their findings, the authors express the hope "that hasty conclusions . . . will not be drawn, because these findings are not conclusive." It might have been enlightening to know what the actual choices of plan were, a priori, for the total union members enrolled, but these might have been heavily weighted by the preponderance of one specialized union. Although not mentioned in the study, the premiums charged were not a governing influence since they were the same for both plans. However, the substantial difference in cost for subscribers and dependents among the three unions, as may be elicited from Appendix Table E-1, might have an important bearing on future premium and subscriber attitudes. When due consideration is given to the relative values rather than absolute dollar amounts, actuaries should find the tables in this report of substantial assistance in estimating costs for separate types of medical care.

The report by Densen and his associates was prepared with the objective of comparing the hospital utilization experience of two groups of insured lives that differed only with regard to the type of medical care plan in which they were enrolled. The two samples included 56,519 enrollees in HIP's comprehensive medical care plan and 52,640 Blue Shield enrollees covered for surgical and maternity care, of whom about 37 percent had in-hospital coverage for physicians' care. Both samples were covered by the Associated Hospital Service of New York (Blue Cross) whose cooperation made it possible to get accurate data from the original records for each hospital admission. Inasmuch as the samples studied were very large and almost perfectly comparable, the influence of random fluctuations was remarkably small in most instances. Utilization rates were obtained with regard to age, sex, family composition, residence and occupational status. The results presented provide a wealth of Blue Cross hospitalization data beyond any heretofore available.

The two sets of enrollees showed a marked difference in their hospital admission rates. For those covered by Blue Shield, the annual rate was 74.5 per 1,000 for nonobstetrical admissions, while for HIP enrollees it was only 61.0. This difference is due mainly to nonsurgical admissions, particularly those for respiratory infections. For tonsillectomy, influenza, pneumonia and bronchitis, the Blue Shield admission rates were nearly double those of HIP enrollees. There was no appreciable difference in the average length of stay for those admitted.

The findings suggest that, when diagnostic and consultation facilities are provided in a comprehensive medical group practice plan, there is much less recourse to hospitalization for such purposes. Since a comparison of the rates for serious ailments failed to show marked differences, it can hardly be implied that HIP physicians have less access to hospitals than others. The wide divergence in the rates for tonsillectomy is pointed to as a possible reflection of a difference in medical philosophy or, perhaps, a lack of economic incentive to hospitalize patients under a comprehensive group practice plan where no direct fee is involved for physicians' services.

Both the data and the methodology of the report by Densen and his associates are worth close study by the actuary concerned with the insurance costs of hospital and medical care. The authors deserve high praise not only for their careful effort but for the quality of their results.

<div align="right">EDUARD H. MINOR</div>

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—Accident and sickness insurance; 4— Social security; 5—Other topics.

References to allied subjects will be found in the following publications: *Mathematical Reviews*, published by the American Mathematical Society—Subjects: Theory of probability, mathematical statistics, mathematical economics, various other mathematical topics; *Monthly Labor Review*, published by Bureau of Labor Statistics—Subjects: Cost and standards of living, employment and employment services, fringe benefits, handicapped, industrial hygiene, industrial relations, labor organization and activities, manpower, older workers and the aged, personnel management, social security (general); *Population Index*, published by Office of Population Research, Princeton University, and Population Association of America—Subjects: Mortality, fertility, marriage, divorce, the family, various other demographic topics; *Social Security Bulletin*, published by Social Security Administration—Subjects: Retirement and old age, employment, maternal and child welfare, health and medical care, various other topics in social security; *Journal of the Institute of Actuaries*—The review section contains digests in English of articles appearing in foreign actuarial journals.

<div align="center">ACTUARIAL AND OTHER MATHEMATICS, STATISTICS, GRADUATION</div>

H. E. Salzer, *Tables of Osculatory Interpolation Coefficients*, pp. xi, 25, National Bureau of Standards, Washington, 1959.

Tables of coefficients are given for two, three, four, and five-term osculatory interpolation when numerical values of the first derivative of a function, as well as of the function itself, are available at equidistant points.

LIFE INSURANCE AND ANNUITIES

*D. W. Gregg, Editor, *Life and Health Insurance Handbook*, pp. xxxiii, 1060, Richard D. Irwin, Inc., Homewood, Ill., 1959.

This volume contains 69 chapters divided into 6 sections: Personal Life Insurance; Life Insurance for Business Purposes; Programming and Estate Planning; Health Insurance; Life Underwriting and Sales Management; and the Institution of Life Insurance. Each chapter was prepared by a specialist and reviewed by at least four consultant editors. Altogether, there were 109 participants in this effort. The volume also contains 19 appendixes ranging in scope from historic dates in the development of life insurance in the United States to tables of net level premiums and to specimen policy forms and various agreement forms.

*R. C. Buley, *The Equitable, 1859-1959*, pp. xviii, 262, Appleton-Century-Crofts, Inc., New York, 1959.

This story of the founding and development of the Equitable Life Assurance Society of the United States emphasizes its relationship to the growing economy of the country. Attention is given to the trend from "rugged individualism" toward government regulation in business affairs, including insurance, and to the spread of social consciousness among business leaders. Dr. Buley, who is Professor of History at Indiana University and a Pulitzer Prize Winner, is also the author of a history of the American Life Convention.

The first chapter, which deals with the founding and early years of the Equitable, contains a brief account of the development of insurance from the time of the ancient Babylonians through the founding of European life insurance companies, and also describes some of the problems and difficulties of the early American companies and the struggles among them for supremacy. Among the topics treated in later chapters is the introduction of tontine insurance by the Equitable and its role in the early growth of the Society to a position of leadership. Other early developments by the Society are described, such as the first incontestable provision in individual policies and the steps leading to Equitable's decision to pioneer in group insurance; details are given of the first group insurance policy (1911).

The history presents the role played by Equitable and its officers in the difficulties preceding and during the Armstrong Investigation in 1905, and the resulting New York legislation which has served as a pattern for many other states. Biographical sketches are given of some of its outstanding leaders, including the founder, Henry B. Hyde; William A. Day, a prime mover in the mutualization of the company; and Thomas I. Parkinson, who had broad insurance interests and was among the early opponents of fiscal policies which would lead to inflation.

W. Boileau, A. Stalnaker and T. J. Luck, *Life Insurance Agency Financial Management*, pp. xi, 294, Richard D. Irwin, Inc., Homewood, Illinois, 1958.

This book was designed to fit the Study Program of the C.L.U. Management Education Program offered by the American College of Life Underwriters. It presents an analysis of the legal, accounting, managerial, and economic aspects of the financial control of a life insurance agency as seen from the agency head. It combines textual discussion of the principles underlying agency financial management with a practical analysis of actual problems of financial control of the life insurance agency. The

material is presented in four parts. Part I covers some of the fundamental background subjects underlying financial management with a brief coverage of accounting, statistics and general principles of control. The other parts cover financial situations in the agency plus some New York Law, principles of agency financial planning, the actual study of operating income and expenses of the agency, and new activities handled by some agencies such as group insurance, accident and sickness, and brokerage.

J. P. Jones, "Civil Service Retirement Program, 1959," *Social Security Bulletin*, July 1959.

Current provisions of the Civil Service retirement law are discussed with an accompanying brief chart of major provisions. Also included are tables of illustrative monthly benefits (including age retirement, disability, and survivor benefits) based on various salary and service combinations, and tables comparing annuity reductions as provided by law with actuarial equivalent reductions based on the a–1949 Table at 3%. The latter tables illustrate the financial inequities created by the arbitrary formulas in the Civil Service law, usually in favor of individuals who elect survivor protection, but with significant differences between individuals of different ages.

The discussion emphasizes changes introduced by the major amendments enacted in 1956. In effect, the system now provides a basic retirement benefit of almost 2% of final 5-year average pay for each year of service, with a maximum of 80% and a disability minimum of 40%. Widows (and disabled widowers) of employees dying in active service receive one-half of the basic annuity. One surviving child receives $50 or $60 a month, depending on whether or not a parent also survives. Similarly, benefits for all children in a family may be as much as $150 or $180 per month (three or more children when employee average pay was $4,500 or more).

A section on financing gives the "level-premium" cost of the present system as 21.25% of payroll. The employee contribution of 6½% of pay is "matched" by equivalent contributions from the agency appropriation, leaving 8.25% of payroll to be provided by direct Congressional appropriations.

J. L. Cowen, *Occupational Differences in Separation Rates for Railroad Workers, 1954–56*, RRB Actuarial Study No. 2, pp. iii, 30, Railroad Retirement Board, August 1959.

The study presents and analyzes the separation rates for railroad workers during the years 1954–56 by occupational group. The causes of separation studied include mortality while in active service, disability retirement, age and service retirement, and withdrawal. In addition, the study contains statistical information concerning new entrants in the railroad industry in recent years and employees active in 1956. These data are also by occupational group.

For purposes of this study, all railroad occupations were classified into nine major groups. Rates of separation and statistical data are given for each of these major occupational groups and are compared with those for all railroad employees combined. The analysis is supplemented by a further breakdown of data for two very broad occupational groupings, that is, operating and nonoperating employees. The first group comprises all railroad employees whose work relates to the movement of trains, while the second includes all other employees.

The study is the first of its kind to be published by the Railroad Retirement Board. The data for this study were derived in conjunction with the work on the seventh actuarial valuation of the railroad retirement system. The valuation itself did not analyze the experience by occupation or occupational group.

M. G. Sirken and M. Spiegelman, "Method of Constructing the 1949–51 National, Divisional, and State Life Tables," *Vital Statistics—Special Reports*, vol. 41, p. 149, U.S. Public Health Service, Washington, D.C., July 31, 1959.

The method followed in constructing these life tables is very close to that described by T. N. E. Greville in *U.S. Life Tables and Actuarial Tables, 1939–41*. Since the publication by Greville is out of print the present report reproduces the description of his method of construction and graduation of the life tables.

D. P. Murphy and D. H. Abbey, *Cancer in Families*, pp. x, 76, published for the Commonwealth Fund by the Harvard University Press, Cambridge, Massachusetts, 1959.

This study compares the incidence of cancer among the families of 200 white females between the ages of 40 and 45 admitted to Philadelphia hospitals with cancer of the breast, and the families of a control group of 198 white females registered at a Philadelphia dental clinic. Each group, made up of approximately 6,000 relatives of the same generation as the index person or of the generation of her parents, was the subject of an original and a follow-up field investigation. At first a study of breast cancer only, the emphasis later shifted to cancer of all sites. The data reveal no differences of statistical significance between the families of patients suffering from breast cancer and the families of the control group with respect to the frequency of cancer or to its specific site, although other investigations have suggested that a familial correlation exists.

ACCIDENT AND SICKNESS INSURANCE

Hospitalization Insurance for OASDI Beneficiaries, pp. vii, 117, printed for the use of the Committee on Ways and Means, U.S. Government Printing Office, Washington, April 3, 1959.

This report was prepared by the Department of Health, Education, and Welfare in response to a request of the Committee on Ways and Means of the House of Representatives. In the covering letter to Ways and Means Committee Chairman Mills, HEW Secretary Flemming noted that "the report presents information on the characteristics of the aged population, current levels of use of hospitals and expenditures for medical care by aged persons, factors influencing trends in costs of medical care, and present methods of financing hospital care for the aged. It also presents estimates of the costs and discusses the administrative implications of providing hospital and nursing home care insurance through the old-age, survivors, and disability insurance mechanism. The report also discusses several alternative methods of helping the aged meet these costs.

"We have attempted to present the most important factual information bearing on this subject in the most objective possible manner.

"In addition, the introduction identifies the arguments that are advanced both for and against Federal action in this area. We have not, however, attempted to present conclusions and recommendations based on this discussion."

In the introduction, the statement is made that "in our society the existence of a problem does not necessarily indicate that action by the Federal Government is desirable. The basic question is: Should the Federal Government at this time undertake a new program to help pay the costs of hospital or medical care for the aged, or should it wait and see how effectively private health insurance can be expanded to provide the needed protection for older persons?" The Administration subsequently concluded that the latter course was preferable and actively opposed Federal legislation to provide hospital and medical care benefits under OASDI.

The report contains cost estimates for a program of hospital and nursing home benefits for persons eligible for OASDI benefits. These estimates are based on utilization data developed by means of household interview surveys and are therefore subject to question because of the considerable respondent error and sampling error that is possible under such an approach. The report does cite the substantially higher cost estimates prepared by three insurance trade associations (American Life Convention, Health Insurance Association of America, and Life Insurance Association of America), These latter estimates were based on claim experience under insured plans (with allowance for extra-utilization which the associations anticipated would result under a "free" governmental program) rather than on the results of household interviews, and were about 50% above the HEW's comparable first-year cost figures. Later and revised cost estimates, presented in comparison with estimates by the Department of Health, Education, and Welfare, are contained in the Statement of the American Life Convention, Health Insurance Association of America, and Life Insurance Association of America on H.R. 4700 and similar proposals to amend the Social Security Act read by E. J. Faulkner before the House Ways and Means Committee, July 16, 1959.

The report concludes with an appendix describing the large number of major legislative proposals in earlier Congresses for Federal health insurance legislation for the stimulation of the spread of voluntary health insurance, or for the support of state medical-care programs.

U.S. National Health Survey, *Impairments, by Type, Sex, and Age, United States, July 1957–June 1958*, pp. 28, Public Health Service, Washington, April 1959.

For this purpose, impairments are defined as "certain chronic or permanent defects, disabling or not, representing, for the most part, decrease or loss of ability to perform certain functions, particularly those of the musculo-skeletal system and special senses." The only conditions included are those contained in a Classification of Impairments developed within the Public Health Service. It is pointed out that impairments may be due not only to continuing active chronic diseases, but, more generally, to old injuries and past, inactive diseases or influences.

The numbers of specific impairments and corresponding rates per 1,000 persons are shown separately for males and females without distinction according to age. For an abbreviated list of impairments, numbers and rates are shown for broad age groups (without distinction by sex), and by major activity (school and preschool, usually working, keeping house, retired). Further details shown are number of impairments of each type caused by injury, number with one or more days of bed stay during the year of observation, and the number seen by a physician within the past year and at any prior time.

U.S. National Health Survey, *Disability Days, United States, July 1957–June 1958*, pp. 68, Public Health Service, Washington, May 1959.

For this purpose, "disability is a general term used to describe any temporary or long-term reduction of a person's activity as a result of an acute or chronic condition." These conditions include, among others, injuries and impairments classified as chronic by a definition used in the Survey. The days of disability are classed on the basis of days of restricted activity (curtailment of usual activity because of an illness or injury), bed-disability, days of work-loss, and days of school-loss. For each such classification there are shown the total number of days of disability during the period of observation

and also the number of days per person per year. This detail is subdivided according to urban or rural residence, sex, age, family income, physical condition, quarter of the calendar year, and whether usually working, keeping house, or "other" activity.

U.S. National Health Survey, *Limitation of Activity and Mobility Due to Chronic Conditions, United States, July 1957–June 1958*, pp. 40, Public Health Service, Washington, July 1959.

The report states that "since severity criteria were not applied to the chronic conditions of persons in this report, the tables include persons with comparatively minor conditions, such as hay fever or flatfoot, as well as those with serious heart trouble, diabetes, and other serious ailments." A table shows the distribution of persons, by age and sex, according to the number of chronic conditions reported during the survey period. Further tables show, for persons with chronic conditions classified according to their major activity (usually working, keeping house, retired, attending school), the extent of the limitation of their activity and also the extent of the limitation of their mobility. Corresponding tables are prepared for persons with chronic conditions distributed according to their family income and age. Another corresponding set of tables presents data separately for urban and rural residents according to age, but not sex.

U.S. National Health Survey, *Children and Youth, Selected Health Characteristics, U.S., July 1957–June 1958*, pp. 43, Public Health Service, Washington, October 1959.

The data in this report, which relate to the population under 25 years of age, summarize "the major facts relating to the amount and kind of health, injury, and disability experienced by young persons and the extent to which they use the services of physicians, dentists and hospitals." References are given to reports of the National Health Survey that present greater detail for each topic.

A. W. Brewster, "Canada's Federal-Provincial Program of Hospitalization Insurance," *Social Security Bulletin*, July 1959.

This article develops the history of hospitalization insurance in the various Canadian Provinces from voluntary insurance through the Hospital Insurance and Diagnostic Services Act, which was passed in 1957. This Act provides for federal sharing in the cost of the different provincial hospitalization insurance plans, which, by the fall of 1959, will have been set up throughout the country except for the Province of Quebec and the Northwest and Yukon Territories. Each Province decides for itself what form of financing its program will have, and the net effect will be nearly universal coverage in the participating Provinces.

Voluntary Hospital and Medical Insurance in Canada (1956) and *Voluntary Medical Insurance in Canada (1957)*, pp. xiii, 179 and 107, Research and Statistics Division, Department of National Health and Welfare, Ottawa, December 1958 and March 1959.

The first of these memoranda, one of a series, constitutes a study of the experience of voluntary hospital and medical insurance plans in Canada. It includes basic material on the enrollment and financial experience of all the major plans operating in the field of prepaid health care during 1956. The second memorandum has reference to medical care insurance only and provides comparable statistical data for 1957.

SOCIAL SECURITY

J. A. Lazerson, "1959 Amendments to the Railroad Retirement Act," *Social Security Bulletin*, July 1959.

This article discusses changes in the Railroad Retirement Act brought about by the 1959 amendments. These changes raised benefits 10%, raised the earnings base to $400 per month, provided actuarially reduced benefits for spouses at age 62, and raised the future tax rates, with the changes in rates after 1964 directly related to those imposed by the OASDI system after that year. Other changes liberalized the disability earnings test, modified the retirement test for survivor beneficiaries, and provided that railroad retirement benefits will not be counted as "income" in applying a means test to veterans' non-service-connected pensions. Subsequently, another law repealed the latter provision.

A summary of the principal provisions of the Railroad Retirement Act as amended, 1959, is shown in chart form as well as illustrative retirement and survivor annuities for various assumptions regarding compensation, length of service, and family composition. Retirement annuities average 2.09% of career compensation for each year of service for the $400 per month worker. Most survivor annuities will be paid in accordance with the provision that in no event will total family benefits be less than 110% of the amount which would be paid by the OASDI system if railroad service had always been considered covered employment.

The financial and actuarial status of the Railroad Retirement Account in 1959 is discussed, with particular reference to the effects of the Social Security Amendments of 1958 and the Railroad Retirement Amendments of 1959. The latter produced a decrease in actuarial deficiency from more than 4% of railroad payroll to .60% of payroll, as estimated by the actuaries of the Railroad Retirement Board. This has been primarily accomplished by increasing the tax rate to a combined ultimate rate of 18% in 1969 and thereafter, on the basis of present OASDI and railroad retirement tax schedules.

OTHER TOPICS

*R. Tilove, *Pension Funds and Economic Freedom*, pp. 91, The Fund for the Republic, New York, April 1959.

This report is one of a number to be issued by The Fund for the Republic in connection with its study of the basic issues underlying a free society. The question posed is whether private pension plans, which fulfill a need for security, also involve implications that may restrict economic freedom. The report does not attempt to search out all the ways in which pension plans may have an impact on economic freedom; it does not, for example, consider the possible effects of compulsory retirement. However, two aspects of pension plans which have warranted some public discussion because of the possible impact on economic freedom are discussed; first, the possible restraining influence on labor mobility; second, the potential for concentration of economic power as a result of the acquisition of common stock by self-insured pension funds.

The author comes to the conclusion that there are both debit and credit columns in assessing the effect of private pension plans on labor mobility. They generally tend to restrain mobility, but the continued strength of this tendency is in doubt. The restraint has little influence at the younger ages where mobility is high; and at the older ages, where its influence would presumably be effective, there are other more powerful factors at work. Where private pension plans do not check mobility, whether

because they are industry-wide or because they have vesting or early retirement provisions, they give the worker a margin of security which tends to help him in challenging the risk of change. Private pension plans hold significant potentialities either for tying a worker to his job or for improving his mobility and perhaps even lengthening his productive years. Developments to date indicate the direction may be favorable to mobility and economic freedom.

In considering the potential for concentration of economic power as a result of the acquisition of common stocks by self-insured pension funds, the author looks into the aggregate ownership and recent net purchases of common stock by pension funds, the extent to which such investment is concentrated in certain issues, the possible future growth of common stock holdings by pension funds, the buying of "own company" stock and the investment in other companies for control. He also discusses the attitudes of trustees toward the voting of stock held and any pension fund impact in proxy contests.

The conclusion reached is that, although the dollars involved imply a vast potential for concentration of economic power, there is no real evidence that this has developed into a significant public problem. There is no "clear and present danger," nor even an implied threat for the near future. Nevertheless, reasonable steps might be taken to give the public the opportunity to appraise, from time to time, whether concentration of economic power or the use of pension funds to that end has or has not developed. The sensational advance of private pension funds has given a jolt to public interest that may ultimately help to develop an informed public better able to cope with our problems of economic freedom.

P. H. Jacobson, *American Marriage and Divorce*, pp. xviii, 188, Rinehart & Company, Inc., New York, 1959.

This volume is the first comprehensive source of nationwide information on the occurrence, duration, and dissolution of marriage in the United States. Chapters on marriage are devoted to trend, seasonal pattern, geographic variations effected by laws, and type of ceremony. Another on patterns in marriage describes differentials in mate selection and in frequency of marriage by race, age, and marital status, and includes information on the interval before remarriage. A chapter on chances of marriage and remarriage presents nuptiality tables for single, widowed, and divorced males and females.

Divorce and annulment are likewise treated in detail in several chapters. A chapter on children in divorce includes information on age and custody, divorce rates by size of family and duration of marriage, and some details on orphanhood. The final chapter, mortality and the duration of marriage, deals with mortality by marital status, widowhood, relative importance of death and divorce in marital dissolutions, and includes duration of marriage tables. Appendix tables include annual mortality and population estimates, not previously available, for married and unmarried persons by sex, race, age, and duration of marriage.

D. J. Bogue, *The Population of the United States*, pp. xix, 873, The Free Press, Glencoe, Illinois, 1959.

This book, which is intended primarily for reference use, describes and interprets the population changes of the 1940's and 1950's in the light of recent events and historical trends. The basic statistics were obtained from various reports by the Bureau

of the Census, supplemented by data from the National Office of Vital Statistics and other agencies. There are chapters on the growth and distribution of population, and on its composition by age, color, nativity, sex, marital status, religious affiliation, and occupation. Others deal with migration, households, education, labor force, income, mortality, and illness. Also included is a special chapter on fertility, written by Wilson H. Grabill of the Bureau of the Census. The final chapter is devoted to population projections and the implications of the probable future changes.