

# JAMES C. HICKMAN: AN ACTUARY WHO MADE A DIFFERENCE

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## 1. INTRODUCTION

At some level, each person would like to make the world a better place; we all want to make a difference. For most, this goal is accomplished at a personal level, such as by being a good parent, spouse, or friend. Others take on a leadership role at a more visible level and are widely recognized for “making a difference.”

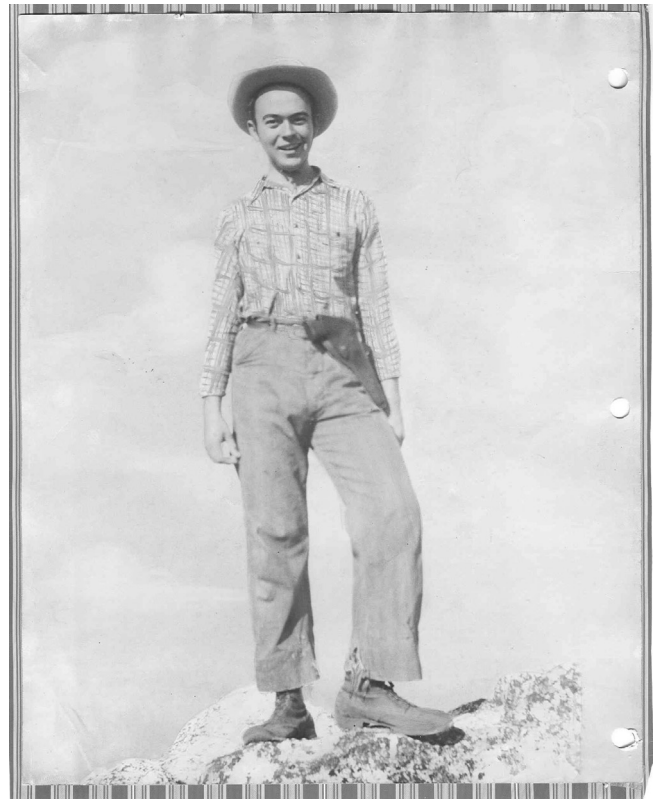
But how can an actuary make a difference? Being an actuary means many different things to different people. Because of their interdisciplinary functions, actuaries are viewed as mathematicians, statisticians, computer scientists, demographers, financial analysts—the list goes on and on. With these many roles, an actuary’s path to being an effective contributor can be unclear.

This narrative is about Jim Hickman, an actuary who made a difference. Hickman was a true renaissance actuary: he was a teacher, administrator, social scientist, visionary within the profession, and public servant. (He held no desire to be in the limelight and never served in public office.) Because the *North American Actuarial Journal* is a scientific journal, this article focuses on Hickman’s scientific achievements. And there were many.

This article also attempts to set these achievements in context and to describe how they were simply a part of a larger agenda. To do this, I begin with the foundations in Section 2. Hickman’s scientific contributions can roughly be broken up into those related to statistics and those to retirement systems, the topics of Sections 3 and 4, respectively. Section 5 presents the broader context of Hickman’s many achievements.

## 2. FOUNDATIONS

James Charles Hickman was born on August 27, 1927, in Indianola, a rural town in Iowa. Because he was too young to serve in the military during World War II, during the summers of 1944 and 1945 he worked for the U.S. Forest Service in Idaho as a lookout and smoke chaser. Hickman had a great love for the outdoors and would return to this position during his college summers. After graduating from high school in 1945, he spent 16 months in the U.S. Air Force. Part of this assignment was spent as a historical writer in post-World War II Tokyo. It is here that we see the first evidence of Hickman’s love of history. Following his stint with the Air Force, Hickman attended Simpson College in Iowa, where he received a bachelor’s degree in mathematics in 1950.



**Sixteen-year-old Jim Hickman serving as a member of the U.S. Forest Service.**

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His life as an actuary began at the University of Iowa, where Hickman spent 1950–52 earning a master's degree in mathematics with an actuarial science emphasis. He was then employed for five years at Banker's Life (now Principal Financial) in Des Moines, Iowa, working as a life actuary. He became a Fellow of the Society of Actuaries in 1958 and an Associate in the Casualty Actuarial Society in 1959. Hickman returned to graduate school at the University of Iowa in 1957 and received his PhD in 1961. He joined the Statistics faculty at Iowa after graduation.

### 3. STATISTICS AND ACTUARIAL SCIENCE

Hickman's first scholarly article appeared in December 1963 in the *Journal of the American Statistical Association*, then and now a premier statistical outlet. The article was based on his 1961 PhD dissertation, "On Random Sets, Derived from a Subsample, for Statistics," written under the supervision of Professors Allan T. Craig and Robert V. Hogg. The paper and thesis introduced new methods for constructing forecast intervals and regions for future observations. Although there was no actuarial content in the thesis, it does provide evidence of Hickman's deep interest in forecasting and planning of future events. Just as importantly, Hickman had the opportunity to work with two giants in the field of mathematical statistics, Craig and Hogg, and received solid training in probability and statistics that underpinned his subsequent scholarly work.

#### 3.1 Stochastic View of Life Contingencies

The depth of that statistical expertise was immediately apparent in the 1964 article "A Statistical Approach to Premiums and Reserves in Multiple Decrement Theory," published in the *Transactions of the Society of Actuaries*. In this article Hickman placed some then-recent deterministic results of Bicknell and Nesbitt (1956) on a probabilistic basis. This was to be the first in a long line of Hickman's contributions in moving what was then known as "life contingencies" from a deterministic to a stochastic basis.

Life contingencies, as described in Jordan (1958), is the study of long-term insurance contracts, typically life insurance and annuities,

where the primary contingency is the length of the insured's life. As noted by Hickman (1985a), life contingencies were developed in Europe and systematized by King (1887). In Jordan and other widely accepted texts in use in the early 1960s, such as Hooker and Longley-Cook (1953), each rate of decrement was assumed to apply exactly, with no random variation taken into account.

The probabilistic viewpoint represents the length of life, and type of decrement, as random variables. This viewpoint is entirely consistent with the deterministic paradigm in that expected values of discounted cash flows can be captured using deterministic techniques. Moreover, the probabilistic viewpoint allows the analyst to quantify other aspects of risk.

The intellectual relationship between life contingencies and the stochastic basis of insurance, known as risk theory, was even then widely recognized; see, for example, Bowers et al. (1997). It also has a long academic history. Seal (1969) notes: "Great ingenuity was displayed by European continental writers of the nineteenth and early twentieth centuries in devising moment formulas (usually only up to the second order) for more and more general types of life insurance contract." He recommends Bohlman (1909) for additional reading on this early history. In a discussion of Hickman's article, Nesbitt (1964) cites the work of Cramér (1930), who decomposed risk theory into "individual" and "collective" bases. Under the former, Cramér discussed the risk of individual insurance contracts and showed how to represent life insurance, endowment, and annuity contracts as random variables. As noted by Hickman in his response to Nesbitt's (1964) discussion, individual risk theory as applied focuses on one-year risks such as in short-term contracts, not the overall mortality risk. Moreover, in a paper in that same volume of the *Transactions*, Hickman with then-student Robert Fretwell published another paper (Fretwell and Hickman 1964) that examined several probability bounds and other ways to approximate the tail of the sum of independent annuity random variables. Based on his statistical training, Hickman was clearly thinking of life contingencies from a probabilistic framework.

For actuaries in the business community, however, rates of decrement were assumed to apply exactly. By showing how the multidecrement

framework could be expressed on a probabilistic basis, Hickman removed the last major intellectual hurdle to placing life contingencies on a stochastic basis. Over the years he became one of the leaders in moving the actuarial community to view life contingencies as an applied probability model. Hickman promoted this view in numerous actuarial newsletter and magazine articles and provided a summary for mathematicians in the conference proceedings for the American Mathematical Society (Hickman 1985b). His vision made him a prime contributor to the book *Actuarial Mathematics* (Bowers et al. 1987, 1997), which has influenced thousands of actuarial students worldwide. Primarily because of his contributions to this landmark text, actuaries today do not even question the probabilistic basis of life contingencies.



**The Actuarial Mathematics author team in 1985. From left to right: Jim Hickman, Newton Bowers, Hans Gerber, Cecil Nesbitt, and Don Jones.**

This was anticipated by Jean Lemaire (1990) in his review of *Actuarial Mathematics*, where he stated, “The major innovation introduced by this book is the probabilistic approach to the mathematics of life contingencies.” Lemaire went on to prophesize: “For actuaries and future actuaries, this lengthy textbook is a major revolution: it will have a deep impact on the education and the practice of actuarial science throughout the world.”

The probabilistic basis of life contingencies allows actuaries to better analyze and communi-

**James C. Hickman: Milestones, Awards, and Honors**

- American Academy of Actuaries Board of Directors, 1969–70, 1972–75
- Society of Actuaries Board of Governors, 1971–74, 1991–94, Vice-President 1975–77
- Social Security Panel, 1975
- Recipient of the Halmstad Prize, 1977, 1979
- Simpson College Alumni Achievement Award, 1979
- University of Iowa Alumni Achievement Award, 1993
- Actuarial Foundation Trustee, 1994–99
- Jarvis Farley Award for Service, American Academy of Actuaries, 1997
- John O’Connor Award for Volunteer Efforts, Society of Actuaries, 2000

cate the uncertainty of the financial security systems that they study. Moreover, this intellectual foundation means that actuaries are well equipped to address new models that are being developed to understand uncertainty, such as enterprise risk management.

**3.2 Mortality Studies**

Having begun his working career as a life actuary at Banker’s Life (now Principal Financial Group), it is not surprising that after receiving his statistical training, Hickman turned his attention to statistical problems involving mortality studies. His first efforts in this area were together with Richard Estell, in which they investigated the use of alternative definitions of life expectancies (Hickman and Estell 1969). This was followed up with then-student John Krall by extension to multiple decrement tables. Krall and Hickman (1970) quantified the impact of removal of a source of decrement (such as accidents or coronary heart disease) from a mortality table. Although Hickman’s experience was from a commercial enterprise, both papers were written with the purpose of proposing alternative indices that could be used in addressing public health policy goals.

Hickman returned to his study of life tables through his partnership with Robert B. (Bob) Miller. Hickman advised Miller’s doctoral dissertation at Iowa in 1968 (Hickman’s first doctoral student), and they subsequently cemented this partnership when both joined the faculty at the

University of Wisconsin–Madison (Miller in 1968, Hickman in 1972). Miller partnered with Hickman in his statistical studies of mortality as well as decision theory and insurance pricing, the topic of Miller’s dissertation. They published their first joint paper in 1970.

Subsequently, Hickman and Miller published a paper in the *Transactions of the Society of Actuaries* in 1977 (Hickman and Miller, 1977), extending a then-evolving literature on the connection between statistical Bayesian methods and classical (deterministic) graduation methods for smoothing life tables. Their initial study provided the framework for their subsequent paper, “Bayesian Bivariate Graduation and Forecasting,” which first appeared in preprint form in the *Actuarial Research Clearing House* in 1979; it won the 1979 Halmstad Prize for the best paper in the actuarial literature. The paper was subsequently published in 1981 by the *Scandinavian Actuarial Journal* (Hickman and Miller 1981). As the title suggests, this article further developed graduation techniques for life tables using Bayesian machinery. Here the authors introduced a coherent method for smoothing across ages (in the same time period) and across time. Through this “bivariate graduation,” analysts could provide forecasts of smooth life tables directly, an important consideration for practicing actuaries who need to account for mortality trends explicitly. The authors then followed up this stream of research in Miller and Hickman (1983), where they used simulation techniques to compare alternative estimation methods used in developing life tables.

### 3.3 Decision Theory, Insurance Pricing and Design

Through Hickman’s early business employment, he understood the need for disciplined decision-making processes, particularly in insurance-related activities such as pricing, and more generally in the planning of future business endeavors. An important part of his research involved more formal decision theory and its applications to insurance pricing and the design of insurance products.

For the insurance world, the 1960s were an exciting time for those interested in formal models

of decision making. The classic theory of games developed by von Neumann and Morgenstern (1947) was becoming widely known in the world of economics, and its impact on decision making under uncertainty was enormous. This broad framework enabled researchers to think about how to set prices of insurance contracts (whose outcomes are uncertain). Unlike classic actuarial pricing theory that implicitly uses ideas of fair valuation and expected values for pricing, this economic approach explicitly allows one to incorporate risk attitudes to model the demand and supply of insurance. For a now-classic book on this era, see Borch’s *The Economics of Uncertainty* (1968).

Hickman was an active participant in this evolving literature. With then-undergraduate student Douglas Zahn, they described in Hickman and Zahn (1965) individual risk theory and compared this to economic pricing principles. A more detailed discussion was given by Hickman and Miller (1970), work based in part on Miller’s doctoral dissertation. Here they related then-developing statistical decision theory (as described in Raiffa and Schlaifer 1961) to economic pricing theory under uncertainty. The statistical decision framework blends nicely with Bayesian analysis. In this paper Hickman and Miller tied this approach to the work on graduation theory that they developed in Hickman and Miller (1977).

The Bayesian connection was further explored in Miller and Hickman (1973) in the context of insurance credibility theory. Credibility involves the updating of insurance premiums based on new experience as it arises, and thus is a natural application of the Bayesian paradigm that provides a disciplined method for updating decisions in the presence of new information. As established by Mayerson (1964), Bayesian methods had been used in credibility theory since the work of Bailey (1945, 1950). As noted by Miller and Hickman, “Before the foundations of Bayesian statistics were widely understood, Bailey formed some eloquent criticisms of classical statistics and developed an openly Bayesian approach to credibility.” Miller and Hickman further developed this connection and showed how to make it work in the context of the classic “aggregate loss model” that simultaneously accounts for the frequency and severity of claims.

In another paper on insurance pricing and design of products, Hickman (1971) foreshadowed an important development yet to occur in actuarial science, the introduction of a stochastic investment environment for the liabilities of life insurance productions. Hickman began this paper with a quote from Augustus de Morgan (1808–71), mathematician and actuary: “It may safely be said there is nothing in the commercial world which approaches, even remotely, the security of a well-established and prudently managed insurance office.” His point was that, during the infancy of life insurance in the Victorian Era, economic conditions and interest rates were relatively stable compared to the volatility of the late twentieth century. Many life insurance products contained embedded investment guarantees, including equity-linked life insurance and annuity and pension products. Although the paper traced the historical immunization theory such as proposed by Macaulay (1938), it acknowledged that this was not a sufficient set of tools to address the problem of a volatile investment environment. This paper served the valuable purpose of raising an important topic. In hindsight, we now acknowledge that actuaries would have been well served to integrate financial economics literature more quickly into the actuarial literature.

#### 4. RETIREMENT SYSTEMS

Having spent the early part of his career thinking and writing on life insurance, Hickman by the mid-1960s surprisingly turned a major part of intellectual attention to Social Security and retirement system issues. That he spent considerable time thinking about retirement issues is evidenced by his expository article in the *Iowa Business Digest* in 1965 on Social Security, as well as two more technical articles (Hickman 1967, 1968) on aspects of private and public retirement plans. Most actuaries spend an entire career in a single practice area. Hickman’s broad array of interests even early in his career—life insurance, health public policy, social insurance, private pensions, as well as mathematical statistics—is further evidence of his talent and breadth.

In the pension area, Hickman’s early work allowed him to develop the intellectual capital he used to make major advances in retirement sys-

tems in the mid-1970s. Hickman was a member of a Consultant Panel on Social Security, a blue-ribbon team of actuaries and economists that reaffirmed the serious long-term financial deficits of the Social Security system. This report served to identify Hickman as one of the leading actuarial thinkers on Social Security, a topic on which he gave numerous lectures to public interest groups and wrote extensively in the popular press over the years.

During this period Hickman also teamed with Newton Bowers of Drake University and Cecil Nesbitt of the University of Michigan to write a series of articles on the dynamics of pension funding (Bowers, Hickman, and Nesbitt 1976, 1979, 1982). Bowers, Hickman, and Nesbitt provided a mathematical framework that described the intricacies of contribution schedules and funding requirements for private pension plans. Their work was recognized through the receipt of the 1979 Halmstad Prize for best paper in the actuarial literature.

#### 5. TEACHER, ADMINISTRATOR, PROFESSIONAL VISIONARY, AND PUBLIC SERVANT

The contributions of this actuary who made a difference went far beyond his scientific publications. Hickman excelled in teaching and administration and in serving the profession and the public.

Hickman was a superb classroom teacher and was recognized for his teaching, research, and service efforts through the 1985 Gaumnitz Distinguished Faculty Award given by the University of Wisconsin–Madison School of Business. Teaching is concerned with knowledge dissemination, and Hickman viewed his role as an educator in a much broader context than most university faculty. An examination of his résumé shows over 100 published discussions, reviews, research reports, and essays. This amazing record spanning 48 years of activity demonstrates that Hickman believed in the synergy between knowledge dissemination and knowledge creation, also known as teaching and research. Hickman’s discussions of other scientists’ research served to deepen the profession’s understanding of new ideas as well as to foster broader acceptance. Hickman was an

academic who believed in teaching practicing actuaries and other academics through his ability to see connections between related fields of inquiry. For those who attended academic conferences with Hickman, many recall that he was frequently called upon to give a synopsis of the conference contributions that often spanned many fields. Hickman was an actuary who could see the “Big Picture.”

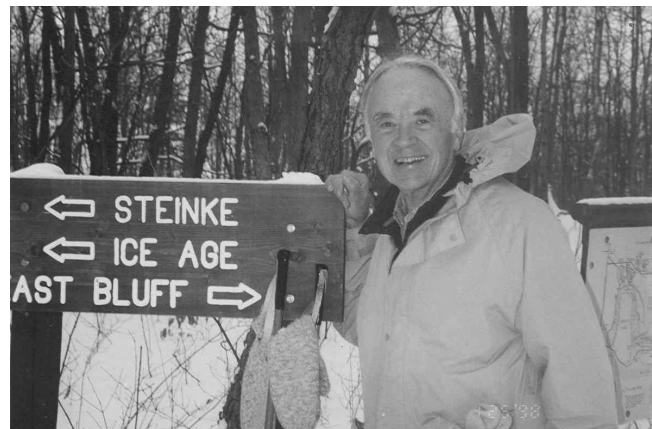
Given his ability to communicate and to see the big picture, it is not surprising that Hickman was asked to take on a major leadership role at the institution he had been serving for many years. From 1985 to 1990, Hickman served as the Dean of the School of Business at the University of Wisconsin. He proved to be an adept administrator and was not afraid to try new ideas. As Dean, Hickman developed a public and private partnership between the State of Wisconsin, alumni of the School, and corporations to provide funding for a new building for the School of Business. A pioneer in public-private partnership, his innovative approach to development as Dean of the School of Business is now the model that nearly all of the construction on campus has followed since 1985. The University of Wisconsin has benefited greatly from Hickman’s ability to see the big picture.

The actuarial profession has benefited not only from Hickman’s scientific contributions and teaching efforts but also from his work on the professional infrastructure. Hickman received the American Academy of Actuaries’ 1997 Farley Award and the Society of Actuaries’ 2000 John O’Conner Award. These awards honor actuaries who have made exceptional contributions to the profession as volunteers.

Hickman believed deeply in the importance of service to the public. In 2004 he wrote the following about Past-President of the Society of Actuaries Ernest J. (Jack) Moorehead: “For me, the enduring message from his life is that an individual and a profession is measured by their service to the public. Jack was a giant according to this yardstick and, also, many others.” Hickman was also a giant according to this yardstick. He was one of the founding trustees of The Actuarial Foundation, a nonprofit organization that serves the public by harnessing the talents of actuaries. Hickman played a critical role as a board member

of the American Players’ Theatre, helping to rescue this Wisconsin-based outdoor Shakespearean theater group from bankruptcy in the 1990s. As a board member of Blue Cross/Blue Shield of Wisconsin, he spearheaded the concept of providing state universities with \$250 million for medical care research when the organization went private in the early years of this century. These are just a few examples of his many service activities; to properly document Hickman’s service contributions would require at least another article.

Hickman had a deep interest in history that manifested itself not only in his personal but also in his professional life. As part of the fiftieth anniversary of the Society of Actuaries, Hickman wrote a series of historical essays with Linda Heacock that described highlights of the evolution of actuarial science in North America. In the same vein, Hickman (1999) wrote an article entitled “Actuaries Who Have Made a Difference” that appeared in the magazine *Contingencies*. Here he chronicled the lives of three actuaries: Richard Price (1723–91), Elizur Wright (1804–85), and M. Albert Linton (1887–1966). He wrote of them, “[We will] look backward at actuaries who have made a difference. This remarkable group did more than contribute actuarial ideas or successfully manage an insurance enterprise. They were active participants in the movements of their time. They were noticed. They may not have changed the direction of history, but things haven’t been the same since their times.” James C. Hickman (1927–2006) belongs in this group. He was a remarkable actuary who made a difference.



**Hickman in 1998, visiting a park.**

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## REMEMBERING JIM HICKMAN

### From John Beekman, ASA, Ball State University

Jim was very encouraging in my research, writing, and service with committees of the Society of Actuaries. Our friendship started in the academic year 1969–70 when I was on sabbatical leave at the Department of Statistics and Actuarial Science at the University of Iowa. The summers of 1970 and 1971 were also spent in Iowa City. Bob Hogg, the Chairman of the Department, was most cordial and helpful, and Jim's and Bob's knowledge and efforts were very beneficial to the inauguration of the actuarial programs at Ball State University in 1970. Each week the Department held an informal seminar in which members could present ideas from their current research. I presented the first few chapters of my book (Beekman 1974) there. In addition, two papers devoted to an approximation of the finite time ruin function of collective risk theory were developed by Newton Bowers and myself (Beekman and Bowers 1972). Jim and Bob posed many valuable questions as those papers evolved in Iowa City and Des Moines. Jim also helped me develop a strong interest in the history of actuarial science.

Jim's stimulating conversations at the Actuarial Research Conferences were always received with joy. The first such conference was held at the University of Michigan on November 14–16, 1966. Cecil J. Nesbitt served as Chairman of the Organizing Committee and did an excellent job in making this first Actuarial Research Conference an outstanding success. Ball State University hosted the conference in 1978. At that time, Newton Bowers, Hans Gerber, James Hickman, Donald Jones, and Cecil Nesbitt announced their plans for the new actuarial textbook (Bowers et al. 1986, 1997).

The American Mathematical Society conducted a Short Course entitled “Actuarial Mathematics” at the University of Wyoming, Laramie, on August 10–11, 1985. The Short Course was organized by Cecil J. Nesbitt, James C. Hickman, and Elias S. W. Shiu. Eight papers were presented; their titles indicate the areas of actuarial science covered:

- “Introduction to Actuarial Mathematics,” by J. C. Hickman

- “Updating Life Contingencies,” by J. C. Hickman
- “Models in Risk Theory,” by H. H. Panjer
- “Loss Distributions,” by S. A. Klugman
- “Overview of Credibility Theory,” by P. M. Kahn
- “A Survey of Graduation Theory,” by E. S. W. Shiu
- “Actuarial Assumptions and Models for Social Security Projections,” by J. A. Beekman
- “On the Performance of Pension Plans,” by C. J. Nesbitt.

The eight papers appeared as volume 35 of *Proceedings of Symposia in Applied Mathematics*, edited by Harry H. Panjer and published by the American Mathematical Society in 1986.

Shortly after the publication of *Actuarial Mathematics*, an excellent overview of the actuarial profession written by Cecil J. Nesbitt appeared: “Personal Reflections on Actuarial Science in North America from 1900” (Nesbitt 1988). This was published in the American Mathematical Society volume *A Century of Mathematics in America, Part III*. The paper had three main sections. The section on Sources of Actuarial Science contained discussions of Accounting, Demography, Economics, Law and Regulations, and Medicine. The section on Some Actuarial Theories contained subsections on Estimation of Mortality and Other Rates, Graduation Theory, Risk Theory, Credibility Theory, Mathematics of Compound Interest, and Mathematics of Life Contingencies. The section on Applications summarized the growth of life insurance, retirement income policies, pension funds, and the Old Age, Survivors, and Disability Insurance system. The paper concluded with a comprehensive list of 80 references. One year later, further material on the history of the actuarial profession was provided in Trowbridge (1989).

In 1999 the Society of Actuaries celebrated its fiftieth anniversary. This led to the publication of two outstanding books, which are listed in the References. The fiftieth anniversary monograph contains an excellent introductory essay, “Milestone Ideas: Marking Fifty Years,” by James C. Hickman and the reprinting of seven major works that first appeared in the *Transactions of the Society of Actuaries*. The first paper, “A New Mortality Basis for Annuities,” by Wilmer A. Jenkins and Edward A. Lew contained elaborate analyses

of time trends in insurance and population mortality. Generation and year-of-exposure projection methods are presented and analyzed in considerable detail. The second paper, “Fundamentals of Pension Funding,” by C. L. Trowbridge provided a framework for discussing funding methods for pensions. The seventh paper is “An Actuarial Layman’s Guide to Building Stochastic Interest Rate Generators” by J. A. Tilley. The construction of stochastic interest rate generators is an important component of an actuarial model of a financial security system.

The book *The First 50 Years: Society of Actuaries 1949–1999* demonstrates how actuaries helped their companies and institutions fulfill the promises made through insurance policies, retirement plans, Social Security and other social programs, employee benefits, and investment plans. The book brings to life many events that influenced financial security throughout the world. It contains a remarkable timeline from 1649 through 1998, emphasizing events that were significant in the evolution of countries, actuarial science, demography, economics, insurance, probability, Social Security, and statistics. This wonderful timeline and introductory remarks are the comprehensive work of James C. Hickman.

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### **From Phelim Boyle, PhD, Wilfrid Laurier University and the University of Waterloo**

Jim Hickman played a key role in advancing the scientific framework of actuarial science in North America. He was one of the first to grasp the importance of using stochastic methods in life insurance and pensions. Jim was a visionary whose enthusiasm for research, teaching, and the highest professional standards was infectious. He provides an enduring role model for all academic actuaries with his dedication to scholarship and to his profession.

Here are a few personal memories of this great man. I first met Jim at various Actuarial Research Conferences in the seventies. I was impressed with his breadth of learning and his graciousness. Often Jim was invited to summarize the conference. I will never forget these summaries: they were outstanding. Jim had the knack of finding an important idea in each paper and connecting them all together on a higher plane.

When I was starting out as an academic Jim was very supportive. I had my share of self-doubts, and Jim gave me the encouragement that was very important for me then. I recall that he said one of my early papers on immunization was a *sleeper*, and after looking up the meaning of the word I was very happy. Jim and his wife, Margaret, were very generous hosts to me when as a young academic I visited them in Madison. To this day I treasure the experience.

I still quote some of the wise sayings that I first heard from Jim. One of them is: *There are hay stacks out there with no needles in them*. Jim had a wonderful range of interests that extended far beyond actuarial matters. I learned a lot from him every time I met him.

Jim inspired many people in his life. We will miss him.

### **From Hans Gerber, ASA, University of Lausanne**

I was the youngest member of the *Actuarial Mathematics* author team. The exchange of ideas with the four coauthors was a privilege and quite a learning experience for me. Most of our meet-

ings took place over the weekend, starting on Friday evening. On Sunday evening we went home loaded with inspiration and new assignments. I always admired Jim.

He could see things in the greater context. Not only did he see the woods through the trees, but he was also familiar with the universe that surrounds the woods. He had clear ideas about how a chapter should look, long before it saw ink on paper. I remember one of Jim's formulations in particular: "With a tip of the hat to . . ." What an elegant way to put things in perspective! Jim, we miss you.

### **From Robert V. Hogg, PhD, University of Iowa**

Jed Frees has done an excellent job explaining why Jim Hickman was an actuary who made a difference, so I'll add just a few personal remarks. I was associated with Jim as a teacher, one of his advisors, a colleague, and a great friend. I first met him when he attended the University of Iowa as an MS student in 1950–51 because he took probability and mathematical statistics as part of his actuarial program. He earned that degree in mathematics in 1952, after which he accepted a position with Banker's Life.

Jim worked for several years and then returned to the University to work for his PhD degree. At first, Jim found advanced mathematics very difficult after having been away from school for some time. However, nothing would deter him, and he wrote an excellent PhD thesis under Allen T. Craig and myself that involved prediction intervals using some fairly well-known statistics, including certain quadratic forms. I must admit that I was somewhat sorry that I didn't think of a topic in which he could have used more of his excellent actuarial background, but, in the long run, it probably wasn't such a bad idea for Jim to have this broader approach.

When he graduated in 1961, Iowa needed an actuarial teacher, as Byron Cosby had left Iowa for Texas. So W. T. Reid, head of the Mathematics Department, Allen Craig, and I "huddled" and decided we should try to hire Jim. He accepted and in 1965 helped us form the Department of Statistics; later we added the words "and Actuarial Science" to the name of the department.

Jim was a great faculty member, and he and I started to write a business statistics book

together. However, that project was folded into a book entitled *Finite Mathematics and Calculus*, along with Ron Randles and Tony Schaeffer. This book was to include business statistics, for which we had written a supplement in that area. However, the publisher, Cummings Publishing, and the four authors agreed that it was not a good idea to write a book with a committee, as it was not overly successful since not many universities saw great cooperation between mathematics and statistics. As I look back on it, Jim and I should have stayed with our original project and not tried to weave in some mathematics.

After leaving Iowa to go to Wisconsin in 1972, he was able to organize the team of Bowers, Gerber, Hickman, Jones, and Nesbitt that was successful in writing an outstanding book, *Actuarial Mathematics*. I must admit that I always thought that I had some influence in that stochastic view of life contingencies as two of the authors, Don Jones and Jim, were PhD students of mine. I had forced them to become experts in mathematical statistics, and it shows in their book.

Of course, as an Iowan, Jim knew every little fact about Iowa, like how many gallons of water went over the Coralville dam each day. I believe that he learned the same sort of thing about Wisconsin. However, Jim never forgot Iowa and was awarded two honors from here: the Distinguished Alumni Achievement Award in 1993 and an Alumni Fellowship from the College of Liberal Arts and Sciences in 1999. The latter was the first class of these Fellows, each of whom was on campus for about three days interacting with students and faculty. One of Jim's "classmates" that year was James Van Allen, so it was a very good class.

As I write this, it is still difficult for me to believe that Jim Hickman is dead. I remember one seminar back in the late 1950s when Don Jones, Jim, and I figured out that we were three years apart in age, with Don being the youngest and I the oldest. So we did stray from the assignment occasionally. After Jim joined the faculty, he convinced Allen Craig and me to study the book by Raiffa and Schlaifer (*Applied Statistical Decision Theory*) in our seminar. Since Allen was very much against the Bayesian approach, Jim really had to do a great sales job, and he even convinced me to consider Bayesian methods, which I secretly did (that is, I never told Allen). So Jim is

right: Jim was an actuary who made a difference. He certainly did in my life, and I thank him for many memories.

### ***From Warren Luckner, FSA, University of Nebraska–Lincoln***

I first met Jim Hickman when he was hired to teach life contingencies at Sentry Insurance in Stevens Point, Wisconsin, to several actuarial students from the Aid Association for Lutherans and Sentry Insurance on six Saturdays in the spring of 1973. What I remember most about that experience is Jim noting that he never traveled the same route from Madison to Stevens Point.

That philosophy is a simple illustration of what motivated Jim throughout his professional and personal life: taking new paths. Jim made a significant contribution to initiating many new paths that have strengthened both actuarial science and actuarial practice throughout the world, including

- The annual Actuarial Research Conference
- The Actuarial Research Clearinghouse publication
- The Actuarial Education and Research Fund
- The Actuarial Standards Board
- The landmark SoA text *Actuarial Mathematics*, coauthored with Newton Bowers, Hans Gerber, Don Jones, and Cecil Nesbitt
- The actuarial science program at China's Nankai University
- The SoA's membership in the prestigious American Association for the Advancement of Science
- The *North American Actuarial Journal* and
- The Actuarial Foundation.

These contributions reflected Jim's broad view of the profession and its role in serving the public interest; they encouraged the generation and communication of new ideas through research and education. These contributions also provided guidance for the application of actuarial science for the benefit of those who participate in financial security programs, and encouraged actuaries to participate in activities that contribute to the public good.

The breadth and depth of Jim's contribution to the profession and to society are further evidenced by

- More than 120 articles, papers, and books authored or coauthored
- His community, church, and public service activities, including serving on fire and police pension boards, health-care-related boards, advisory councils, and committees, and the Board of Pensions for the Presbyterian Church, and as a consultant on workers compensation Legislation
- His consulting assignments, involving pensions, catastrophic reinsurance, loan guarantees, auto insurance rates, federal income tax, and surplus requirements
- The journals in which his papers and articles were published, including *Transactions of the Society of Actuaries*, *Proceedings of the Casualty Actuarial Society*, *Journal of the American Statistical Association*, *Journal of Risk and Insurance*, *American Journal of Public Health*, *Scandinavian Actuarial Journal*, *Insurance: Mathematics and Economics*, and the *North American Actuarial Journal* and
- The many ways in which he made these contributions, including teaching, writing, speaking at meetings, serving on professional organization committees and task forces, and serving on local, state, and federal government advisory groups.
- Twice receiving the Halmstad Prize for best paper on actuarial research, once for “Bayesian Bivariate Graduation and Forecasting,” coauthored with Robert B. Miller, PhD, and once for “Dynamics of Pension Funding: Contribution Theory,” coauthored with Newton L. Bowers, Jr., FSA, and Cecil J. Nesbitt, PhD, FSA, the diversity of the two topics illustrating the scope of his interests and work
- Receiving the American Academy of Actuary’s 1997 Jarvis Farley Service award in recognition of his distinguished academic career and volunteer service
- Serving as the chair for the 1996 Bowles Symposium, which featured the topic “The Old-Age Crisis: Actuarial Opportunities”
- Serving as editor of the special issue of the *North American Actuarial Journal* commemorating the SoA’s fiftieth anniversary
- Developing the time line of significant events for the SoA’s fiftieth anniversary history book, as well as serving as a primary reviewer for the book and
- Writing the introductory essay for the SoA’s fiftieth anniversary monograph, a retrospective of papers covering various practice areas and considered to be seminal works that have stood the test of time.

Jim was one of those rare individuals who was highly respected not only within the academic community, but also within the business community and government. That respect was evidenced by

- His reputation as a teacher and researcher, as well as his selection as Dean of the Business School at the University of Wisconsin
- His multiple elections to the Board of the Society of Actuaries and to the Board of the American Academy of Actuaries
- His service on the Consultants Panel on Social Security to the Senate Finance Committee and the House Ways and Means Committee, and on the Advisory Committee to the Joint Board for the Enrollment of Actuaries and
- Alumni achievement awards from Simpson (IA) College and the University of Iowa, and designation as an Alumni Fellow by the University of Iowa College of Liberal Arts.

The stature Jim attained in the actuarial profession is further evidenced by

Jim was a popular speaker on a wide range of actuarial and other topics, including public interest topics such as Social Security and genetics. The reasons for his popularity were his knowledge, his skill in communicating and summarizing ideas in a concise and understandable manner, and his distinctive voice, which made it easy to listen to him.

Ultimately, though, Jim’s most important contribution was everyone who benefited from his many years as a professor at the University of Iowa and the University of Wisconsin, and from his long and continuing volunteer service to the actuarial profession and to society. These individuals who came into contact with him were inspired, in no small measure by Jim, to make contributions to the actuarial profession, to other professions, and to society.

I considered Jim a true renaissance man. He had many and varied interests and strongly believed in service to his church and his community, as well as to his profession. He spoke

knowledgeably and eloquently on many topics, but always in a way that was understandable to those less knowledgeable. He was a genuinely caring person who was gracious to all regardless of intellectual or social standing. He climbed many mountains both intellectually and literally, having hiked to the summit of several 14,000+ foot peaks.

Simply put, Jim was a great thinker, a great communicator, and a great person. I am honored to have known him.

### ***From Robert Shapiro, FSA, The Shapiro Network Inc.***

Over the past 45 years I have been fortunate to have been involved in a number of activities with Jim Hickman, all of them enlightening and most of them memorable.

I first met Jim around 1962, when I was one of a group of actuarial summer students at Northwestern Mutual. Jim was spending the summer at the company and was teaching us actuarial mathematics. At the end of the summer program, Jim gave us an actuarial aptitude test and met with each of us individually to discuss our futures.

At my meeting, Jim showed me a test rating scale (I don't remember the details) and commented that I was "in the gray area" for becoming an actuary. I vaguely remember Jim saying something motivational, but I walked out thinking, "I don't like being in the gray area. . . . I'm

going to show him that I can become an actuary." Following that summer I aggressively studied for exams and can tell you that Jim's influence was a significant factor in my motivation over the next five years!

I continued to have opportunities to visit and work with Jim, most recently on Actuarial Foundation and other public outreach activities. I am an ordinary mathematician (not a renaissance actuary!), more of a student than a teacher, and I've always appreciated Jim's greatness as an actuary and an educator. However, what always astounded me about Jim was his willingness to help, his constant encouragement, and his positive attitude throughout any project.

When I learned that Jim had passed, I was deeply saddened. Attending the funeral service and listening to his close friends and family speak, I realized even more why I felt such a tremendous sense of loss. I knew about Jim's accomplishments only in the educational and actuarial worlds, but his reach and influence in the university where he taught and the community where he lived impacted many people and public institutions. Jim never spoke of these accomplishments . . . he just did them.

Jim was a rare individual—every bit the caring, renaissance man that Jed Frees refers to in his paper. We all owe a great deal to him. We can only begin to repay him by honoring his professionalism, integrity, energy, and positive outlook. His life was a superb example for all of us.