

TRANSACTIONS

ADDRESS OF THE PRESIDENT, CHARLES L. TROWBRIDGE

ACTUARIES AND ACADEMIA

ACTUARIES like to think of themselves as members of a learned profession—not a very well-recognized profession perhaps, but a learned one all the same. In support of this claim we can point to the Society of Actuaries and the Casualty Actuarial Society, with their long-established emphasis on education and examination, their professional journals, their content-oriented professional meetings. Particularly because of a unique examination system, with examination requirements perhaps higher than those of any other profession on the North American continent, our claim to educational achievement, at least within our line of endeavor, holds up very well.

Perhaps we do not so readily recognize, however, that actuaries are in a very unusual relationship to the academic world. In contrast to medicine and law, we put little or no emphasis on academic degrees, and we have no university-connected actuarial schools giving the equivalent of M.D. or J.D. degrees. In contrast to the physical, biological, or social sciences, we have no close connection with the Ph.D. programs of the graduate schools of our major universities. Instead, we rely heavily on a professionally run (as opposed to an academically run) education and qualification system. We have a distant or hands-off relationship with academia, and what must be viewed as a go-it-alone approach.

One of the routes to full professional standing in the actuarial field is indeed divorced from the university campus. I refer to what I will now call route A—by which perhaps two-thirds of our membership entered actuarial endeavor. After somehow acquiring an interest and a background in mathematics, the prospective actuary obtains actuarial employment. Under an intensive study program laid out by the professional organization, the student on a self-directed self-education basis learns while he earns, and eventually achieves professional recognition by passing a series of examinations. Although most actuaries who have followed route A are college graduates, there is no requirement that they be such. The actuarial profession now may be one of the few that impose no degree

requirements and give no credit for academic degrees that the student may have earned. Many of us like it this way. Each of us can point to actuaries who have attained high positions in the actuarial field without any college attendance whatsoever, and these examples are not necessarily from the ancient past.

Despite the emphasis so far on the separation between actuaries and academics, there has always been a route B to membership in the Society of Actuaries. Since the very early days of the twentieth century there has been a handful of North American universities that teach actuarial science. Graduates of these relatively few programs have passed some of the examinations while still in school, have obtained actuarial employment after graduation, and have gone on to become Fellows of the Society and to rise within the profession. It may be of interest here to examine some of these university-based actuarial programs. As we do so, we shall see that some actuaries do have university ties, and some universities do have a commitment to actuarial science.

FOUR ACTUARIAL PROGRAMS WITH A LONG HISTORY AND STRONG TRADITIONS

When some of the older of us entered the actuarial world prior to World War II, there were four strong actuarial programs on the North American continent—two above the United States–Canadian border and two below. All, even then, had their roots in the past, dating back to or before 1920. South of the border were the Universities of Michigan and Iowa, and in Canada the Universities of Toronto and Manitoba.

These early actuarial programs tended (1) to be based in mathematics departments rather than in schools of business, (2) to teach actuarial science at a graduate as well as an undergraduate level, and (3) to have come into being because of the special interest of some talented professor.

The obituaries of Professor James Glover of the University of Michigan and Professor Henry Rietz of the University of Iowa (which appear in the *Record of the American Institute of Actuaries*) make interesting reading even today. The careers of these two early giants of actuarial education were in many ways similar. Each was a charter member of the American Institute of Actuaries (founded in 1909), each served a term as vice-president thereof, neither (as far as I know) was a member of the Actuarial Society of America (the earlier organization, whose roots were along the eastern seaboard), and both died during World War II after long and illustrious careers as heads of their respective mathematics departments and as professors of actuarial science. Professor Glover had particular connection with the earliest of the United States life tables and was once

president of the Teachers Insurance and Annuity Association. Professor Rietz contributed greatly to the early development of mathematical statistics. Both were consultants to the government when the United States social security program was being designed.

North of the border the Universities of Manitoba and Toronto were supplying the needs of the Canadian companies, as well as contributing to the export of Canadian-trained actuaries to the United States. Professor Warren and later Professor Ritcey were pioneer educators in Winnipeg, and Professors MacKenzie and Sheppard played the same role in Toronto.

The actuarial programs at all four schools continue to this day, although their founders have disappeared. The best count that I can make today is that, among the 5,000 current members of the Society (F.S.A.'s and A.S.A.'s as shown in the *1975 Year Book*), the University of Michigan has trained about 400, the University of Iowa about 280, and the University of Manitoba about 220. I have been unable to obtain similar data as to graduates of the Toronto program, but I would assume that perhaps as many as 300 of the present Society members are Toronto-trained. If so, close to 25 per cent of our present membership has had training in one or another of these four original actuarial institutions. Michigan and Iowa each have furnished four of the presidents of the Society (or its predecessor organizations), Manitoba two, and Toronto twelve.

FOUR ACTUARIAL SCIENCE PROGRAMS INITIATED BY REGIONAL INTERESTS

In contrast to the four actuarial programs which began years ago under their own power, four others were initiated shortly after World War II in response to the actuarial needs of a particular geographical area.

In 1953 a program came into being at Georgia State University in Atlanta, sponsored by the Southeastern Actuaries Club and with financial support from the actuarial employers of nine southeastern states. Today 55 members of the Society are graduates of Georgia State's very successful program.

In 1957 an actuarial science program was inaugurated at the University of Nebraska, sponsored by the Nebraska Actuaries Club and the actuarial employers of the state of Nebraska. Society members who commenced their studies for actuarial careers at the University of Nebraska number about 80. The movie *Super Actuary*, scheduled for showing at this meeting, is evidence of the Nebraska Actuaries Club's continued interest in the recruitment and training of actuaries.

An actuarial program for the French-speaking community of Canada began at Université Laval, in the capital city of the Province of Quebec,

as early as 1951, although there was no full-time professor until 1962. The Laval program was inaugurated so that Quebec companies would not have to rely on English-speaking actuaries trained at the Universities of Manitoba and Toronto. Today, 175 Society members appear on a list of those who have studied at Université Laval, although some of these names also appear on the Manitoba and Toronto lists.

Another 55 of our Society's membership were once students at the University of Texas, where an actuarial program was initiated in 1958. Financial support came from Texas insurance companies, and the Actuaries Club of the Southwest contributed scholarship money. This program, too, is thriving.

FOUR OTHER UNIVERSITIES WITH ESTABLISHED ACTUARIAL PROGRAMS

In addition to the four original actuarial schools, and the four particularly identified with special regional concerns, there are four more with well-established actuarial programs. Conceived since World War II, they, like the regionally oriented schools, tend to be based in the business schools, rather than in the liberal arts colleges, of their respective universities.

Drake University in my home city of Des Moines, Iowa, began an actuarial science program in 1950. Over the years it has produced 75 graduates who are now members of the Society of Actuaries. It is in every way a successful program, with great support from the rest of the university and some support from local insurance interests. The Iowa companies have had a split loyalty, with two established actuarial schools 120 miles apart.

The dean of the School of Business at the University of Wisconsin exhibited great interest in the quantifiable aspects of business matters, and in 1948 he established an actuarial program in Madison, Wisconsin, which eventually attracted what is now a particularly impressive actuarial faculty. Wisconsin has produced 75 members of the Society, an unusually high proportion of whom have become F.S.A.'s.

The University of Waterloo is another Canadian school with a rapidly developing actuarial curriculum. Emphasis is placed upon a work-study program, somewhat unique, perhaps, in university-based actuarial training. This phase of the Waterloo program is scheduled for expansion.

Temple University, once a private but now a state school in Philadelphia, established an actuarial program some years ago. Professor Hartman, the first director of the program, is an F.C.A.S., and his interests lay in the nonlife direction; Brian Daly is currently the director. Temple

has produced 35 current members of the life Society, some of whom took courses at Temple after having obtained actuarial employment. Bob Myers devotes part of his tremendous energies to a class at Temple.

THE SITUATION IN THE NORTHEAST

It will now be noted that the dozen universities so far mentioned are concentrated in the United States Midwest and in Canada, with two regional schools in the southeast and southwest. Only Temple is located on the Atlantic seaboard. The historic lack of university-based actuarial programs in the United States Northeast, where actuarial job opportunities are particularly plentiful, is one of the peculiarities of actuarial education. It accounts, at least partially, for the preponderance of eastern United States actuaries who went the A route—that is, who had never taken an actuarial course when they accepted an actuarial job.

The actuarial training needs of this eastern area are, therefore, those of the already employed actuary, particularly the student or the A.S.A. who needs a short, intensive course to prepare himself for a Society examination. In 1963 Harold Garabedian retired from the John Hancock and undertook the development of a program at Northeastern University in Boston. By 1975 some 275 Society members had taken instruction at Northeastern at some time along the way. Because of the specialized nature of the instruction offered, this number of Society members is not really comparable to the similar numbers quoted for other institutions; but the Northeastern program is, nonetheless, an important element of the university-based actuarial education scene.

OTHER CONNECTIONS WITH ACADEMIA

My emphasis on the actuarial programs at thirteen universities does not do justice to all the ties between our profession and the academic world. To round out the picture, let me at least mention some of these other points of interface.

1. There is another dozen or so colleges or universities that now teach, or have taught, actuarial science. Some of these programs are new and untested; others have operated successfully for quite some time, but on a smaller scale than those that I have recognized. I hope actuaries with special interests in some of these schools will forgive me if I do not mention them specifically.
2. Some 60 Society members (roughly 40 A.S.A.'s and 20 F.S.A.'s) have Ph.D. degrees. Of these, only about a dozen seem to have current academic connections. The particular combination of Ph.D., F.S.A., and an active university professorship is rare. Several of those teaching actuarial courses in our universities are Ph.D.'s but not F.S.A.'s, others are F.S.A.'s but not Ph.D.'s.

3. The Society's Committee on Research, in cooperation with the Casualty Actuarial Society, has held a ten-year series of seminars at various university campuses, always with participation of members of the faculty of the institution involved. In reverse order of time, these conferences have been held at Brown University, the University of California at Berkeley, Harvard, Waterloo, Wisconsin, the Wharton School, Harvard (again), Duke, Yale, and Michigan.
4. Our relatively few academically based members play an important role in Society affairs. Several have made important contributions to actuarial literature. The academic representation on the Society's Board of Governors has been impressive, especially since 1972, when voting by mail was initiated. Jim Hickman, Geoff Crofts, Steve Kellison, and Cecil Nesbitt all have been recent Board members.
5. The American Risk and Insurance Association, an organization serving the needs of professors of insurance in our various institutions of higher education, has ties to the actuarial world—and we to it. Society members have published papers in their *Journal of Risk and Insurance*, and one or two have served on the ARIA Board.
6. Another academically based institution, the Pension Research Council, affiliated with the Wharton School and hence with the University of Pennsylvania, has worked extensively in the pension field, including its actuarial phases. Of the 22 members on the Pension Research Council at the moment, no less than 8 are F.S.A.'s, and 4 more have other actuarial qualifications.

ARE WE HURT BY OUR ATYPICAL PROFESSIONAL RELATIONSHIP
WITH THE ACADEMIC WORLD?

Up to this point the emphasis has been first upon the *distance* between the academic and actuarial worlds and then upon the several ways in which these two worlds interrelate. It is now my intent to explore whether the actuarial profession is hurt in any important way by its atypical relationships with academia. It is my contention that this surmise must be answered in the affirmative, for at least two reasons.

The first is the public image of the profession. We can hardly be oblivious to this aspect if we wish to pose as a learned or scientific society. State government tends to view us as part of the insurance industry, federal government worships the Ph.D. degree and tends to call upon academia for its research needs, the press and the mainstream of academia largely ignore us. It might be otherwise if we had stronger roots among those individuals considered to form the intellectual sector of our society.

More important is the fact that our tenuous connections with the academic world must have a negative effect on the development of actuarial knowledge. Practicing actuaries, like practicing M.D.'s and lawyers, have neither the time nor the incentive to make much con-

tribution to the development of the scientific base upon which the profession is founded. Medicine and law, as well as other professions, count on the faculties (and the students) of their university-based professional schools to think, to study, to write, to innovate. The campus is the center for the extension and the development of the body of knowledge that goes to make up the expertise of the profession. Without a strong academic base this body of knowledge is likely to shrink rather than to grow.

Nonacademic actuaries have shown more interest along research lines than we have any right to expect. When we combine their efforts with the good production from our few academic actuaries, the results are respectable. I am glad to see that nine papers were presented this morning, in addition to those that we have had at earlier meetings this year. Nevertheless, we all might wish that there could be more.

Another form of the same problem is the prodigious effort that is put forth by busy practicing actuaries simply to impart to actuaries-in-training the body of knowledge that experienced actuaries have already acquired. If we could rely more on academia for the training process, we would have more energy for the forward march of the profession itself.

STRAWS IN THE WIND

If there is merit in the position I am taking here, and if we agree that a closer bond might be established between the actuarial and the academic world, then it is natural to ask whether there is anything already developing that might lead in this direction. At the moment there are two such matters to which Society leadership already has devoted considerable attention. I refer to the proposals for an alternate route to A.S.A. status and to the establishment of an actuarial research foundation. Neither is a new subject, nor are they dead ones.

Under the alternate route proposal, now under active consideration by the Advisory Committee on Education and Examination, qualified graduates from a qualified university actuarial program would be able to sit for a single comprehensive examination, the passing of which would give the student the A.S.A. designation. Proponents of this proposal point to the resultant strengthening of the bonds between the academic programs and our professional society, hopefully to the advantage of each. However, since the alternate route is not expected to extend to the Fellowship level, expectations along these lines necessarily must be modest.

The concept of an actuarial research foundation also has possibilities for bringing together the actuary and the academic. It is conceivable, though hardly necessary and at this moment not so determined, that the

foundation might be based at some center of higher education. Be that as it may, campus-based actuaries certainly will be at least one source of research talent that the foundation will tap. The goal of the foundation is the accomplishment of needed research projects that busy practicing actuaries in the course of their normal endeavors simply do not get done.

WHERE DO WE GO FROM HERE?

If the foregoing is a reasonable review of where we are today, the natural question is whether actuaries are satisfied with things as they are and with developments as we foresee them. We have managed at least fairly well over a long period of years, relying largely on our own efforts to attract, employ, and develop the talent necessary so that what must always be a relatively small profession can flourish.

Need we change our ways? My own view is that revolutionary change is neither necessary nor desirable but that the evolution of stronger relationships between actuaries and academics will be healthy for both. A search for ways to encourage such development might start with what the actuarial world could do, but it must eventually turn to the other side of the coin.

First, we could give better support to universities already training actuarial students, by means of scholarships or other financial assistance, by finding qualified actuarial teachers, by interesting potential students, and, of course, by providing jobs to graduates. The last we already do well, but our record on the other types of support is spotty. In particular, the unearthing of qualified actuarial professorial talent is a job that the profession itself might undertake. To make this easier, our profession might find ways to sponsor actuarial research that university-based actuaries might be best qualified to undertake. Universities have a perennial budget problem, and actuaries are members of one of the higher-paid professions. A supplement to the professor's income from research funds could do much toward making an actuarial-academic career a viable possibility. It is indeed unfortunate that, for financial reasons or otherwise, two of our most talented actuarial academics recently have left the teaching field. It is also unfortunate that at least two of our actuarial universities are finding it difficult to fill existing academic vacancies.

Next, we might find a way to make it easier for Ph.D.'s who are not F.S.A.'s to attain full membership in our Society. Here I am not suggesting a relaxing of our standards but instead implying that exposure to the practical side of actuarial work, almost a necessity for successful completion of our Fellowship exams, might somehow be arranged. Over the years we have lost much because those who first went the Ph.D. route often have not qualified in our professional society.

The academic world, too, could do something. It should be easier than it is for an F.S.A. already in the business world to achieve a Ph.D., perhaps as a step toward entering the academic world but more likely as a form of self-development and self-fulfillment. F.S.A.-Ph.D.'s, if available in any number, might greatly enhance the actuarial image, particularly in their relations with the ever more academically oriented federal government.

Occasionally, I have heard F.S.A.'s claiming, largely on the basis of the amount of study and the length of time required to pass actuarial examinations, that they have the equivalent of a Ph.D. We sometimes forget that the Ph.D. degree has as its main requirement the carrying through and publishing of a significant "thesis" or "dissertation" and hence the demonstration of research and writing capability. Some university, or consortium of universities, may eventually decide that the F.S.A. status, combined with a dissertation based on a significant piece of actuarial research, can qualify the research-oriented actuary for a Ph.D. degree. If actuarial employers could then make good use of this particular talent, such an individual might have a solid place in both worlds.

Let me end on a personal note. Your outgoing President is not a Ph.D., nor does he expect to become one—yet he strongly feels the challenges on the scientific or the educational side of the actuary's professional life. I hope that I have contributed to the extension of actuarial knowledge; and I like to think that my activities in these directions were at least partly responsible for my becoming President of the Society. I honestly believe that academia can contribute more to actuarial science than it now does, and that actuarial science deserves a larger place in academia. If this address contributes anything to this end, it will have achieved its purpose.

