

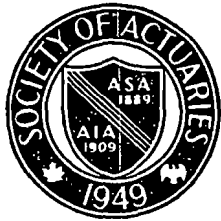


SOCIETY OF ACTUARIES

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PUBLIC HEARINGS OF SOCIAL SECURITY ADVISORY COUNCIL

by Richard G. Schreitmueller

The Social Security Advisory Council, established every four years to review the program, held public hearings in five cities between October 1978 and January 1979. Individuals and organizations turned out in force to testify and to listen. Most speakers advocated liberal positions, but there was a conservative minority including the American Council of Life Insurance, the American Academy of Actuaries, and one retired actuary giving personal views. Employers in the private sector had little to say.

On issue after issue, most speakers wanted more benefits paid to more people; raising the retirement age was strongly opposed. Initial entitlement to disability benefits and accompanying Medicare was criticized as restrictive and slow. Once on the rolls, however, disabled workers were said to need more help and incentive to get back to work; on this liberals and conservatives agreed.

Universal coverage is a hot topic. For federal employees and members of Congress mandatory coverage was urged (except by representatives of the federal employees; they pointed with satisfaction to present arrangements, and viewed with alarm merger of their retirement funds into Social Security). At the state and local governmental level, spokesmen for teachers, police, and firefighters opposed mandatory coverage, pointing to problems in coordinated plan design. Testifying in favor, however, was the American Federation of State, County and Municipal Employees.

Among proposals supported by several were these: (1) paying for the welfare elements in OASDI benefits by general revenue financing, (2) taxing benefits, using those tax receipts to support the social security program, and (3) educating the government and the public on how the system now operates. □

WHY HE'S WHO HE IS

A Conversation with John O'Connor

It was at that modern crossroads of America—bustling O'Hare airport. Our new Executive Director, fourth incumbent since that post was created in 1968, was genially answering the customary questions. The reporter's tacit purpose was to find out just why the Board of Governors' search had ended with an offer to, and acceptance by, this man, John E. O'Connor, Jr.

To begin with, who is he?

- John's married, 36 years old—lives in Arlington Heights, Ill. — father of four, all boys aged between 12 and 4 years. Necessarily he's part way through a lengthy stint in Little League, with considerable assistance and support from his wife, Judy.
- He's by no means strange to professional association work — has been at it 12 years as Director of Finance & Operations for American College of Hospital Administrators (ACHA), a 40-year-old 20,000 professional membership society.
- Actuaries and our ways aren't new to him either. He's worked with a few of us, mainly in designing and running fringe benefit plans for ACHA affiliates.
- John is a graduate in business administration (Loyola University). He qualified as a C.P.A.; in the mid-1960's he practiced briefly as a public accountant.

What is John expected to do for the Society?

The Board of Governors departed from tradition this time by opening the position to either F.S.A.s or non-F.S.A.s. That one of the latter got the nod means that the task is now to be one of managing the concern and its staff and services, not performing as an actuary.

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NATHANIEL INGERSOLL BOWDITCH

by Dwight K. Bartlett, III

Perhaps others interested in the history of actuarial science and the actuarial profession were intrigued, as I was, by the reference to Nathaniel Ingersoll Bowditch (rhymes with Now'ditch) in the little volume, *From Actuarial to Actuary* by Robert C. Mitchell, as one of the early actuaries in the United States.

Bowditch was undoubtedly the leading American mathematician of the early 19th century. He was primarily known for his work in celestial navigation and celestial mechanics. The volume of tables he produced for celestial navigators is still in use today in much revised form and is familiarly known as "Bowditch's". That aspect of his career is well documented in a variety of works including an excellent biography of Bowditch, *Yankee Stargazer*, by Robert C. Berry.

Bowditch's career as an actuary and insurance executive is not nearly as well documented, nor as familiar even to those of us with an interest in insurance history. With this in mind I undertook an investigation of this facet of Bowditch's career.

Bowditch (1776-1838) grew up in Salem, Massachusetts, and in early life engaged in a variety of maritime activities, including clerking in a maritime supply store, serving on merchant vessels in several capacities including ship's captain, and being president of a maritime insurance company. In 1823 he was offered the position of actuary of the Massachusetts Hospital Life Insurance Company at a \$5,000 annual salary. He happily accepted the position since it gave him financial means to publish his scientific works. He served in that capacity until his death. Most of the company's papers and records from that era,

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Bowditch*(Continued from page 1)*

including many in Bowditch's own handwriting, are in the Baker Library, Harvard Business School, Boston, Massachusetts.

While Bowditch's title was simply that of "Actuary", he was responsible for the entire management of the company in a way that would be characterized today by the title Chief Executive Officer. The company was one of the very early life insurance companies in the United States. It underwrote life insurance and also offered a variety of trust services. It was in the latter sphere that the company was most successful; of its assets, in excess of \$6 million by the time Bowditch died, the major part was associated with its trust business. Profits, part of which were given to support the Massachusetts General Hospital, came primarily from the investment income in its trust business. Bowditch personally supervised the investment operations. He was a shrewd judge of investment quality and aggressively pursued mortgage loans in rural Massachusetts at a time when such loans were widely regarded as excessively risky.

Bowditch prepared most of the company's financial reports and its advertising and promotion material, and his staff generally consisted of not more than 10 persons. One is left with almost a feeling that he emptied the wastebaskets, too.

One responsibility Bowditch did not have because it did not exist, was supervising a field force. In those days marketing life insurance by agents was regarded as unseemly; it was not practiced by his company.

A remarkable aspect of Bowditch's career was that he was almost entirely self-educated with but a few years of formal schooling. His scientific achievements were recognized in several ways, such as by election to the presidency of the American Academy of Arts and Sciences, honorary M.A. and LL.D. degrees from Harvard, and appointment as an overseer of Harvard. The long list of his achievements and honors in mathematics and science makes one suppose that he might have made outstanding contributions to the field of actuarial science.

*(Continued on page 5)***THE 1979 ANNUAL REPORT OF THE TRUSTEES OF THE U.S. SOCIAL SECURITY PROGRAMS — OASI AND DI***by Dwight K. Bartlett, III*

Ed. Note: We welcome this review by the new SSA Chief Actuary. A companion article on HI and SMI will appear separately.

This report, the 39th, measures the financial soundness of the Old Age and Survivors Insurance (OASI) and Disability Insurance (DI) programs, employing three sets of demographic and economic assumptions—labelled optimistic, intermediate, and pessimistic. The principal elements in these assumptions are displayed in the following table.

Principal 1979 OASDI Trustees Report Long-Range Cost Assumptions

ITEM	OPTIMISTIC	INTERMEDIATE	PESSIMISTIC
Fertility	Ultimate 2.5 reached in 2005	Ultimate lifetime rate of 2.1 children born per woman in 2005 from 1.793 in 1979	Ultimate 1.5 reached in 2005
Mortality	Average annual improvements of 50% of intermediate improvements	Improvements similar to 1969-76 continued to 1981; similar to 1951-69 thereafter forever Overall improvement 32.7% by 2050	Average annual improvements of 150% of intermediate improvements
Disability Incidence	No increase over estimated 1977-78 experience rates	Ultimate 10% increase over estimated 1977-78 experience rates	Ultimate 20% increase over estimated 1977-78 experience rates
Disability Termination	Actual 1973-77 experience rates	Actual 1973-77 experience rates	Actual 1973-77 experience rates
Annual CPI Increases	Ultimate 2%	Ultimate 4% in 1984 graded from 9.4% in 1979	Ultimate 6%
Annual Gain in Real Earnings	Ultimate 2.25%	Ultimate 1.75% in 2000	Ultimate 1.25%
Unemployment	Ultimate 4%	Ultimate 5% in 1983 graded from 6% in 1979	Ultimate 6%

For the next five years (1979-1983), under the optimistic and intermediate assumptions both trust funds maintain reserves and receive revenues adequate to meet current obligations. But under the pessimistic assumptions cash-flow problems begin in 1983 in the OASI fund, its reserves having declined to 8 percent of annual disbursements. Year-end reserves would not even cover a single month's benefits. In contrast, the DI trust fund would have adequate cash on hand even under the pessimistic assumptions, with reserves actually growing substantially.

For the medium-range future (1979-2003), the optimistic and intermediate assumptions continue to show income exceeding expenditures in both funds. Under the pessimistic assumptions, the OASI cash-flow problems would persist until 1991 or 1992, diminishing then because of the increase in tax rates scheduled for 1990.

For the long-range future (1979-2053), the optimistic assumptions produce 75-year revenues exceeding expenditures on the average. There would be a 15-year period, 2025-2040, during which expenditures would exceed revenues. Under the

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1979 Annual Report*(Continued from page 4)*

intermediate assumptions, annual deficits begin to appear about 10 or 15 years after the turn of the century and continue through the remainder of the 75-year actuarial measuring period. On average throughout the whole period, the deficit would be about 9 percent of the expected expenditures. Under the pessimistic assumptions, a deficit similarly would appear around 2005-2010 and continue throughout the remainder of the measurement period; on average this deficit would be about 38 percent of expenditures.

The Trustees state "that a severe or prolonged economic downturn could jeopardize the short-range actuarial soundness of the Old Age and Survivors Insurance program." They recommend that "no reduction be made in the scheduled revenues of Old Age and Survivors Insurance and Disability Insurance trust funds without making provisions for offsetting reductions in expenditures or alternative financing arrangements", and that "it might be advisable to examine the need for flexibility to reallocate funds between the two trust funds in the short run."

Short-Range Projections

Shown here are income and outgo, as well as reserve balances, for 1978 and the next five years under the intermediate assumptions.

**Estimated Operations of the Old-Age and Survivors Insurance
and Disability Insurance Trust Funds, Combined,
During Calendar Years 1978-83
(Intermediate Assumptions)**

Calendar Year	Amounts in Billions			Funds at End of Year	Funds at Beginning of Year as a Percentage of Disbursements During Year
	Income	Disbursements	Net Increase in Funds		
1978	91.9	96.0	-4.1	31.7	37%
1979	106.4	107.6	-1.2	30.5	30%
1980	120.5	121.5	-1.0	29.5	25%
1981	140.3	135.2	5.0	34.6	22%
1982	156.9	148.9	8.0	42.6	23%
1983	170.8	162.1	8.7	51.3	26%

Annual deficits will continue through 1980, at which point revenues begin to exceed expenditures and trust fund balances start to rise again. The combined reserves expressed as a percent of annual outgo do not rise by much, however; they will hover around two-and-a-half to three months' benefits.

Medium and Long-Range Projections

The medium and long-range forecasts, representing 25-year and 75-year projections respectively, are sensitive to changing demographic and economic conditions.

The combined trust fund condition is actuarially sound over the next 25 years under all three sets of assumptions. Expressing the financial condition as a percent of taxable payroll (total earnings subject to social security tax), the Trustees project the following average surpluses through the year 2003:

Optimistic assumptions	1.75%
Intermediate assumptions	1.17
Pessimistic assumptions	.60

Under the pessimistic assumptions, those cash-flow problems in the OASI that begin around 1983, continue until 1991 or 1992. Then the problem fades because of additional revenues brought in by the scheduled 1990 tax-hike.

*(Continued on page 7)***Bowditch***(Continued from page 4)*

My investigation produced, however, no direct evidence of substantial actuarial work of an original and scholarly nature by Bowditch. He did publish a table for computing the interest on a trust deposit between any two calendar dates for any amount of deposit based on the principles of simple interest as a computational aid, which his Board of Directors authorized him to publish. Copies of these tables are still in existence. Apparently, his creative talents were directed, even in this period, to his mathematical interests. What shines through the extensive company papers that still exist, many of them in his own handwriting are his shrewd judgment and his human qualities.

Just as with present-day actuaries, one of the first items on his agenda as he assumed his responsibilities was to visit several of the life insurance companies of his time to familiarize himself with their work. The companies on which he called included the Pennsylvania Life Assurance Company in Philadelphia and the Union Insurance Company and the Mechanic Life Insurance and Coal Company, both in New York. The last named company was apparently more interested in its coal business than its insurance business since Bowditch's handwritten note of this visit concluded with "Finding myself not a very welcome guest, I asked no more questions." (Some insurance companies today might prefer to be in the coal business).

The other two companies were more significant factors in the life insurance business of that day. Both companies underwrote annuities and life insurance policies. Both companies used variations of the Northampton mortality tables as bases for both annuity and life insurance rates. Although some attempt was made to allow for the difference between annuitant and insured life mortality, Bowditch discerned that the allowance was not adequate. His financial analysis revealed that both companies were losing substantial sums on their annuity policies. The result was that the initial set of life insurance premiums he established for the Massachusetts Hospital Life Insurance Company was identical to the rates of the Pennsylvania Company but

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ARCH

ARCH Issue 1978.2 has made its welcome appearance in new format—275 pages in a light blue cover. Rather than to list the titles and authors, for which see John Beekman's article, *The Actuary*, November 1978, we prefer to whet reading appetites by quoting James C. Hickman's descriptive introduction, thus:

"Most actuaries have heard the criticism that their basic tool, the mathematics of life contingencies, solidified in the last century, and not much has happened since. Often this is followed by a series of statements of which the following are typical:

'Life contingencies, with its stress on expected values, misses the whole point that time until death is a random variable.

'The entire risk dimension is left out of most treatments of life contingencies.

'Actuaries don't seem to realize that construction of a life table is a statistical estimation problem.

'As if all this is not bad enough, life contingencies traditionally uses fixed interest rates and thereby neglects another important component of risk faced in an insurance enterprise.

'Actuaries persist in stating their basic formulas in terms of the two-centuries-old commutation functions, although these no longer represent efficient computing formulations'."

In many ways, the Ball State Conference (to which ARCH 1978.2 is devoted) was directed to answering the critics who have expressed these views.

(Ed. Note: Procedure for subscribing is given on page 8 of our September 1978 issue). □

CONFIDENTIALITY OF FEDERAL STATISTICS

by Robert J. Johansen

Legislation to protect confidentiality of records maintained by the Federal Statistical System has been drafted under the President's Reorganization Project. This Act, if passed, will protect statistical information furnished to the Federal Government and aims to reduce burden and expenses on the public by setting

conditions for interagencies exchange of individually identifiable data.

Certain agencies, e.g. Census and BLS, are designated "Protected Statistical Centers." Files in other agencies can be designated "Protected Statistical Files." Individually identifiable records may not be published or disclosed except to a Protected Statistical Center. A Chief Statistician is made responsible for designating protected files and centers unless legislation has provided otherwise. Protection extends to copies in the possession of the person to whom the record refers or who was the source of the information.

This bill's importance is twofold. It plugs loopholes in present legislation and gives protection in instances where the present status is ill-defined. And it permits controlled interagency exchange of data to reduce duplication caused by two or more agencies requesting similar data from the public. This bill deserves support.

For further information, write to Dr. James T. Bonnen, President's Reorganization Project, Room 9225, New Executive Office Building, Washington, D.C. 20503. □

Mr. Johansen is the Society's representative to the Committee of Professional Associations on Federal Statistics.

Bowditch

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his annuity rates were 10 to 20 percent higher. In his own way of speaking about the Union Insurance Company's rates he observed that "on the whole nothing could be learned from these rates except to avoid them, being the rock on which the company split."

Bowditch was intrigued by the working conditions of the actuary of the Pennsylvania Company, remarking several times in his notes that "the actuary attends daily from 9 to 2 at the office and then it is shut up." He observed also that the actuary worked for an annual salary of \$1,200, a small fraction of his own salary, perhaps reflecting the difference in business hours. His comment about his own working conditions sounds more familiar to modern day actuaries. In December 1830, he wrote a plaintive note to his publisher, reading in part, "Dear Sir, It is now our busy time of settling the annual accounts of

the life office so that I put by for six weeks all mathematics . . . and have literally not a moment of leisure. . . ."

Bowditch developed methodology for examining separately the profitability of his annuity and of his life insurance operations. Despite his earlier accurate perception that the annuity rates of the competing companies were inadequate, he subsequently determined that between 1823 and 1834 his own company had lost approximately \$15,000 on its annuity business.

Upon completion of my investigation, I concluded that Bowditch had left an even more important inheritance to the life insurance business and the actuarial profession than any original scholarly work he may have done in actuarial science. This inheritance is the absolute integrity he demonstrated in the conduct of his office. In 1832 the Board of Control appointed to examine the operations of the company observed "it was an experiment, and the individual (Bowditch) who had the principal agency in putting it into operation was without a precedent to guide him. In the nine years that have elapsed since it was organized, numerous and considerable sums have been intrusted to its management by citizens of different parts of the country, which proves that such an institution was needed while it shows the confidence the public have in its stability as well as in the justice and liberality of its dealings."

Statements attributed to him also reflect his character. "Truth — truth — truth! Let that be the family motto." "Talents without goodness and moral work, I care little for."

Bowditch saw the company not only as a profitmaking concern, operated in part to benefit the hospital, but also as an institution serving the public interest in helping provide financial independence to widows and orphans. Nine days before his death, in his final message to the Directors of the company, he wrote, "Providence has seen fit signally to bless our efforts and make it an institution of public record. I am not aware of any change, the introduction of which into the present system of management I should desire or recommend."

Our profession covets for itself, quite properly, a reputation for integrity. Modern day actuaries have been well served in that regard by the integrity of our predecessors, in particular Nathaniel Ingersoll Bowditch. □