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## QAV: THE ACTUARY IN SYMBOLS

by Frederick W. Kilbourne

The definition of an actuary is more than a parlor game. The public has a right to know why we think we constitute a profession, and why it should care. And we need to decide who we are. Our identity crisis will do us in if not resolved; a tiny house, divided against itself and built on a swampy foundation, has a dismal future.

If the actuary is "a unique and necessary professional" (William A. Halvorson, Presidential Address, *TSA* XXX, 2), in what way are we unique, and why are we necessary? If we cannot clearly define an actuary, how can we say who is *not* an actuary?

Several years ago (*Record*, Vol. 4, No. 1, 14) I suggested a definition of the actuary as "that professional who is trained in evaluating the current financial implications of future contingent events." This definition, clearly more melodious to us than to the man-on-the-street, follows from identifying the common thread in all the actuarial examinations. Its heart can be expressed symbolically as QAV

where

Q = the probability of the contingent event,

A = its financial implication,

V = the transition to current value.

Though that heart is technical, its body can be seen to encompass essentially all actuarial work now being done—and much that is being left undone. Yet the definition satisfies Mr. Halvorson's uniqueness test, apart from minor border disputes with economists and risk managers. QAV seems adequately to describe "who we are", though it may better describe "who we might be."

We will be more effective if we can first agree upon who we are and where

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## DIGGING INTO ACTUARIAL HISTORY

by Raymond H. Daw, F.I.A.

Since my retirement I have been able to study the early history of certain statistical methods which later became part of actuarial science. These have appeared in a pair of papers, (A) "Smallpox and the Double Decrement Table: a piece of actuarial prehistory" (*J.I.A.* 106, 299-318) and (B) "Johann Heinrich Lambert (1728-1777)" (*J.I.A.* 107, 345-363). Most of paper (B) is a translation from the German of a 1772 paper by Lambert relating to subject (A). On this slender basis your Editor has asked me to outline my "modus operandi", and the findings which have given me the greatest satisfaction.

### Following The Trail

My method can be described as studying a subject that interests me and then following up leads which emerge, often from chance events. The initial stimulus came from a lecture at the Royal Statistical Society, London, entitled "The Life Table Is Not Quite Dead." This mentioned Daniel Bernoulli's pioneer work in 1760 devising a double decrement table to investigate smallpox mortality, and reported existence of a translation of his French paper. Had no translation been available I never would have started my work; I have since learnt not to be afraid of foreign languages.

My original submission to the Institute was broadly paper (A), with the translation of Lambert's paper as an appendix. The Editor of *J.I.A.* said this was too long and the translation must form a separate paper. Thus I got the opportunity to study Lambert's life and work in preparing paper (B). I was quite unprepared for the results of this.

Here another chance event helped me greatly. I received an American book circular which included a contents list

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## AT HOME WITH THEIR COMPUTERS

Our March Query about home computers garnered replies from a fine range of readers by any measure, including seniority. Responders, from newest in the Society back, were:

R. Garth Hutchinson	1980
Jonathan L. Wooley	1972
Grace V. Dillingham	1971
Larry A. Steeples	1970
Robert E. Reuter	1969
Lynd T. Blatchford	1966
George M. Sherritt	1959
Charles M. Larson	1949
John M. Boormeester	1949
J. Earnest Booher	1944

The model most reported on was Apple II (there were four of these), but we heard also about PET/CBM, TRS-80 (Models I & II), TI 99-4 and TI-58C. Says one contributor: "The potential user should list all the features that will be of value to him. My list, which included number of languages provided for, direct access storage at reasonable cost, potential for communication with a main computer and with other home computers, half-line spacing to allow subscripts and superscripts, and color graphics to enhance games so I could justify the purchase to my family—led me to my selection." (R.G.H.)

### Should Non-Users Become Users?

"I can't understand why nearly every actuary doesn't have a micro on his desk just as we all had mechanical Fridens in the past. I suppose most don't have enough background to get started and lack time to learn. I am considering offering seminars to teach actuarial uses; anybody interested, please write to my Year Book address." (G.M.S.)

"A computer isn't for a student or busy executive—both have better ways to occupy their spare time. Once the computer bug bites you, be prepared to burn the midnight oil, and to toss in bed

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## Home Computers

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wrestling with why your program didn't work." (J.E.B.)

"My answer would be 'yes', specially for those in technical work. Time in learning will be more than repaid in later time savings, and the user will step into new areas previously denied by the effort required." (R.G.H.)

"Actuaries with an interest in any field or hobby on which they are now maintaining hand records should buy a microcomputer. Also actuaries wishing to enter new areas of research." (C.M.L.)

"The computer is a great consumer of time and money, but worth it, to me, for the intellectual satisfaction as well as the practical results. In general, I have more program ideas than time to work on them." (G.V.D.)

"I know not how I survived without my computer in my BC (before computer) years. Its value for performing studies is inestimable. . . . I am now able to spend more time at home; also I can investigate methods, e.g., Monte Carlo, that limits on time and money would otherwise have prevented. . . . I believe there's a place in every home for a home computer. Little, if any, experience is required for either word-processing or electronic worksheet software; these alone make the investment worthwhile." (L.T.B.)

### Uses By These Ten Actuaries

Distressingly, space limitations prevent going beyond outlining just a selection from among many uses reported.

"Education — teaching eighth-grade church school pupils (attendance records, Bible games, lessons, announcements). Other church-related functions (capital fund appeal projections, annual budgets). I can now communicate to audiences of up to 600 persons using either multiple TV sets or a video beam unit." (R.E.R.)

"My machine has been a home management, educational, recreational, hobby-oriented and actuarial tool. It serves well for financial forecasting and analysis and many, many, other such projects. It can be virtually all things to all people." (J.L.W.)

"One of my many uses has been as an element of a doctoral thesis, making

a pension model of the entire American work force distributed by age, years of service and salary, by each of five funding methods. I also gather and publish extensive data on 500 life insurance companies using the microcomputer at all stages up to invoicing." (G.M.S.)

"My computer reconciles and analyzes bank accounts for both my wife and me. It revealed several bank errors, one of which would have cost me \$400. My personal income tax program not only computes the tax but also calculates next year's estimate, altering it automatically as the year progresses." (J.E.B.)

"I have become associated with an Educational Computer Society, and am engaged in training programmers and finding uses for the computer in education." (R.G.H.)

"My computer helps me with stock market research, horse race research, and poker research. It's hard to believe, but if one ignores the time it eats up, all these are making me money." (C.M.L.)

"My machine keeps financial records for me and for the church of which I'm treasurer. Without prior programming experience or training, I wrote my own bookkeeping program and tested it by reproducing the prior year's church books. It produces my monthly reports to the vestry, and my own income tax return. After a little more aesthetic editing I expect to submit the program to the 99-4 Users' Exchange; meanwhile I'd be glad to send a program listing to any reader who sends me a large stamped envelope." (G.V.D.)

"The principal uses for my home computer are (1) word processing; (2) actuarial research and projects; (3) routine actuarial work; (4) parallel system development; (5) systems documentation." (L.T.B.) (Ed. Note: Mr. Blatchford compiled details of all these which interested readers would do well to request from him.)

"My programmable calculator with companion printer just arrived six weeks ago. I've been teaching myself, and find it has amazing capabilities, producing hard copy for many types of complex computations. As an exercise I set out to reproduce the A-49 Table for males (TSA I, 386-7) which it did beautifully. I expect my machine to do useful work for my job as consultant to the E. & E. Committee." (J.M.B.)

## Other Comments

"My wife has become a 'computer-widow' in much the same way as spouses of Sunday football addicts. But my addiction is 7 days a week." (- - -)

"Today's home computers have the power, speed and capacity of the very largest computers of about fifteen years ago, and cost from \$800 to \$3,000." (G.M.S.)

"I would recommend a microcomputer with disk storage and 64K memory for actuarial work—cost, about \$4,500 to \$6,000. The less expensive dot-matrix printers are very reliable." (L.A.S.)

"The periodicals I get say that all home computers use BASIC as programming language. It is very simple and widely illustrated in books." (J.E.B.)

"Availability of a word processor is one of a home computer's most valuable benefits. Our knowledge is of little value unless we can communicate it; a word processor represents a quantum leap from the typewriter in the art of communication." (L.T.B.)

"My computer lets me fit continuance functions for disability income to algebraic functions which are variants of those described by E. Paul Barnhart (TSA XXV, 119), reducing the time needed to quantify such functions." (R.G.H.)

"I recommend that any potential enthusiast subscribe to BYTE magazine." (L.T.B.)

"Using a tape recorder for storing memory is impractical and a waste of money. VISICALC software makes most programming simple." (C.M.L.)

One contributor, speaking no doubt for all, warns readers that all these enticing opinions come from dyed-in-the-wool computer buffs—"freaks" was the word he chose.

E.J.M.

## Deaths

Henry S. Beers, F.S.A. 1923  
 Ssu-Tu Chen, A.S.A. 1932  
 Charles B. English, F.S.A. 1953  
 Alfred N. Guertin, F.S.A. 1929  
 Annie M. Motheral, F.S.A. 1925  
 Barton S. Pauley, F.S.A. 1940  
 Frederick W. Stephens, A.S.A. 1962

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