SOCIETY OF ACTUARIES

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Actuarial History

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from the periodical *Historia Mathematica*. In it I noticed an article about J. H. Lambert; its references opened for me a whole new field of publications by and about him.

When developing a subject it is not easy to work forward. A better starting point, I find, is a later publication that reviews the subject, or one related to it, giving references to past works. In this case I had long ago read Karn, M. N. (Annals of Eugenics, 4, 279-326) which gives, with full references, the history of the rise and fall of innoculation against smallpox and describes the related statistical investigations. That paper gave me an excellent start, and living near London I hadn't much difficulty finding the books and papers I needed in the excellent libraries we have.

Handling Translations

Most of the early papers relevant to paper (A) were in French and, to my surprise, my schoolboy French, with liberal use of a dictionary, was usually sufficient to get a good idea of a paper's contents. I needed, however, to refer to an expert in French before quoting a translation of any passage.

Lambert's 1772 paper was written in German and I delayed looking at it because my knowledge of German was almost non-existent (two terms at school and 4% in the examination!). To my astonishment I found that with the aid of a grammar and dictionary, looking up every word, I was able to get a fair idea of what that German paper was about. The mathematical formulae of course helped immensely. Having satisfied myself that a translation would be useful, I found an obliging linguist; between us we produced a satisfactory translation for paper (B).

An Exciting Discovery

Lambert made contributions to many branches of science; I have described in paper (B) his "actuarial" contributions which include several "firsts". The one that most surprised and delighted me was his fitting a polynomial of the fifth degree to a series of observed values of l_x. This fitting is done so as to reproduce some, but not all, of the observed values and also to reproduce the slopes of the tangents to the curve (determined graphically) at each end of the age range. Thus this polynomial would "hang together" with the corresponding polynomials for immediately preceding and succeeding age ranges — in other words, osculatory interpolation over 100 years before T. B. Sprague's work! Some authors writing about Lambert's work just regard this polynomial as a function approximating the "law of mortality"; I cannot recall anyone who has recognized it as osculatory interpolation. This illustrates the value of carefully reading original sources.

Anyone writing a historical paper must be prepared to be told that he has got it all wrong or has missed some vital contribution; that is part of the fun of the game. But one also gets suggestions for further work—I have made no promises, but who knows, one day . . . □

DANGER 0, 0, 0, . . .

If you generate a series of $10^{10^{10}}$ random numbers, you are almost certain to get a run of 10^6 zeros (or 1's for that matter). Attention has been drawn to this ominous prospect by G. Brian Hey, F.I.A.; we observed his report in FIASCO, March issue.

On behalf of our anxious readers we asked Mr. Hey for his source. He has kindly cited it: *Journal of the Royal Statistical Society*, Vol. CI, Part 1 (1938), a paper by Kendall and Babington-Smith.

Random numbers users, please don't say *The Actuary* didn't warn you.

E.J.M.

CAN WE DO BETTER THIS YEAR?

Fellows who voted in recent Society elections were 61% of the electorate in 1978, 56% in 1979 and again in 1980. □

YOU SHOULD HAVE RECEIVED . . .

Check now to see whether you have the *Record*, Vol. 6, No. 4, covering our 1980 Annual Meeting, Montreal. If not, make a note to ask Society headquarters if that number doesn't turn up soon.

This newsletter acknowledges with thanks the suggestion by James E. Hoskins, FSA 1920, that we routinely announce Society mailings that don't emerge on a predictable schedule.

NOTES FROM ACTUARIAL OFFSPRING

In our January editorial we mentioned, just as a curiosity, that the first of all actuarial examinations (London, 1850) asked candidates to find the fractional value of the recurring decimal, x = .27272727. A member's 7th grade grandson (B. MacKinnon) then told us (February issue) that you just eliminate the recurring element by subtracting the value of x from the value of 100x.

Now we report messages from the sons of two Society members.

Tom (son of J.M.) Loftis, an actuarial student at University of North Carolina, points out that when the method described by MacKinnon is applied to x = .9 recurring, it furnishes "algebraic proof that 1 is equal to something other than 1 !"

In the same vein, Raam (son of P.V.) Gokhale, a Rutgers sophomore, observes that, in general, the recurring decimal 9 cannot be expressed as the ratio of two integers. He proceeded to explore how the various recurring decimals are produced.

We heard also from Howard Wachspress. He consulted the venerable British algebra text, Hall & Knight, and reports that it gives (p. 43) a general rule for reducing any recurring decimal to a vulgar fraction. He says: "I do recall with some pleasure the discovery of this little gem, and having put it to good use on a Part 2 examination." *E.J.M.*

DISABILITY TERMINATION RATES BEING PUBLISHED

To meet requests, the Committee to Recommend New Disability Tables will have some experience termination rates printed in mid-June in the *Disability Newsletter*, No. 29 (John Haynes Miller, Editor).

William J. Taylor, Chrmn.

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we belong, and then set about convincing our neighbors and lower-case societies in Canada and the U.S.A. that we can be more worth than we are trouble.

Ed. Note: This is an excerpt from the author's concise essay, "What Is An Actuary?", which we believe he will cheerfully send to any enquirer to his Year Book address. □