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COMPUTERS: SOME FORECASTS 1949 AND 1980

by Edmund C. Berkeley

Ed. Note: Edmund Berkeley was a pioneer actuary in the computer field. In 1949 he published a popular book, Giant Brains or Machines that Think. We have persuaded him to catalogue here the outcomes of some forecasts he made in Chapter 11 of that work, entitled "The Future: Machines that Think, and What They Might Do for Men."

It has been a delight to me to be surprised many times over between 1950 and 1980 as the computer field appears on its way to becoming the most important industry in the world—and it's a pleasure to add up the score of those predictions made three decades ago.

Chapter 11 in "Giant Brains" began:

The pen is mightier than the sword, it is often said; and if this is true, then the pen with a motor may be mightier than the sword with a motor.

In the Middle Ages there were few kinds of weapons, and it was easy for a man to protect himself against most of them by wearing armor. As gunpowder came into use, a man could no longer carry the weight of armor that would protect him, and so armor was given up. But in 1917 armor equipped with a motor and carrying the man and his weapons came back into service as the tank.

In the Middle Ages there were few books, and it was easy for a man to handle nearly all the information that was in books. As the printing press came into use, man's brain could no longer handle all recorded information and the effort to do so was given up. But in 1944 a brain to handle information, equipped with a motor and supporting the man and his reasoning came into existence—as the sequence-controlled calculator.

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ELECTIONS 1980

The results announced in Montreal are:

<i>President-Elect</i>	Robert H. Hoskins
<i>Vice Presidents</i>	Dwight K. Bartlett III Charles Barry H. Watson
<i>Secretary</i>	Kenneth T. Clark
<i>Treasurer</i>	Robert J. Johansen
<i>Director of Publications</i>	Robert E. Hunstad
<i>Board</i>	John C. Angle Geoffrey B. Crofts Myles M. Gray Joe B. Pharr Thomas C. Sutton John C. Woody

The number of votes cast, from among 4,192 eligible voters was 2,359 (56.3%).

Colin Jack Is First Executive Director of The Canadian Institute

It's a pleasure to report that Colin E. Jack, one of whose many distinctions has been an Associate Editorship of this newsletter, has been appointed to the newly created post of Executive Director of the Canadian Institute of Actuaries at its headquarters in Ottawa. We extend heartiest congratulations to the Canadian Institute and to Mr. Jack.

DOG LIFE INSURANCE IN SWEDEN

by Carroll E. Nelson

Is it possible to conduct a useful and profitable life insurance business on dogs? In Sweden, definitely Yes! That country has a dog population of about one-half million, of whom 43% are life insurance policyholders.

One company, that I visited in Stockholm last summer, writes more than 85% of Sweden's dog insurance. It is the Jordboukets Försäkringsbolag

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BOOK REVIEW

Global 2000

Reviewed by Geoffrey N. Calvert

The Global 2000 Report To The President: Entering the Twenty-First Century. Prepared by the Council on Environmental Quality and the Department of State. Gerald O. Barney, Study Director. Vol. I. Summary, \$350; Vol. II. Technical Report, \$13.00; Vol. III Global Model, \$800. Superintendent of Documents, U.S. Government Printing Office, Washington, DC 20402.

This major report was commissioned by the President in May 1977, and completed in July 1980. Many government agencies contributed projections of population, resources and the environment. What emerge, therefore, are mainly projections, not predictions, showing what will happen if present policies and trends continue.

"Our conclusions are disturbing," state the joint authors. "They indicate the potential for global problems of alarming proportions by the year 2000. Environmental, resource, and population stresses are intensifying . . . the earth's carrying capacity is eroding. The trends . . . suggest . . . a progressive degradation and impoverishment of the earth's resource base." Responses that are underway fall far short of what is needed, states the report. Necessary changes go beyond the capability of any single nation. An era of unprecedented global cooperation is essential. "Sustainable economic development, coupled with environmental protection, resource management, and family planning are essential." . . . Finally, our federal government requires a much stronger capability to protect and analyze long-term trends . . .

Among the report's specific findings:

- Population growth from 4 billion in 1975 to 6.35 billion by 2000, the growth rate slowing only from 1.8% to 1.7% a year. In sheer numbers, world population will be growing faster in 2000 than today—100 million

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Dog Life Insurance

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(Farming Insurance Company), a mutual company organized in 1890 that has written this coverage since 1923. The facts for this article were generously given me by Mr. Arne Magnuson, a company officer and indeed a hospitable gentleman.

For many years this company's dog insurance was a small portfolio with unfavorable loss ratios. But since redesigning their coverage, they have reaped 20% of their premium income from it, and results have been satisfactory.

Coverage

Protection consists of a package of life insurance and veterinary care coverage, available after the dog reaches 6 weeks of age. After the dog is 7 years old, there is a reduction each year of 20% of the amount insured (but not below \$250), and the coverage terminates after the dog's 10th birthday. All types of disease and injury are covered, injury after the first day and illness after 30 days. Compensation is payable at full sum insured when the dog dies or becomes so ill or injured that it must be destroyed, or when it goes astray. A lower amount is payable when injury or illness has lastingly reduced the dog's value for breeding purposes.

One unusual feature is that in lieu of cash payment the company may give the owner a new dog of the same value as the insured animal.

Veterinary care is paid for costs of examinations, treatment and care of sick or injured dogs subject to a deductible of 1% of base amount for each treatment period of 60 days. For 1978 the base amount set by the National Insurance Act was 13,100 Swedish kroners (\$3,200). Fees are limited to those set by the Swedish Veterinary Society.

Safeguarding Provisions

Coverage is not effective in event of gross negligence or cruelty by those in charge of the animal. If information provided at time of application is incorrect, the insurance is subject to reduction or cancellation. Payment on a claim for the dog having gone astray is deferred 3 months.

Data

The company keeps statistics by type of dog and by cause of claim. Veterinary care experience shows that dog bred

for performance-oriented characteristics enjoy better health than those bred for aesthetic characteristics, but the claims due to accidents show just the reverse.

A Question for Canada and the U.S.A.

Could dog insurance be successfully transacted here by following the Swedish model? We do not have a national licensing of veterinarians on whom a successful claim administration would depend. As the market for such coverage would be on registered dogs, development of dog insurance presumably should come through organizations of registered dog owners. □

ACTUARIAL NOTATION— IAN, LAN & CAN

A Study Group of the Institute and the Faculty of Actuaries, chaired by David E. Purchase, has just distributed an account of its work, of which the following is, one might say, a synopsis of a synopsis. Any interested actuary may request a copy of the full report from the headquarters of either the Institute or the Faculty.

IAN is the symbol for the present International Actuarial Notation which has existed with very little change since the end of the 19th Century. Over the last 20 years or so, growing dissatisfaction has been expressed with the IAN, albeit from only a minority of actuaries. Among the major reasons for this is the incompatibility of IAN with computer use.

LAN stands for Linear Actuarial Notation, the word Linear meaning the expunging of all the prefixes and suffixes, half a line up or down, on which generations of us have cut our eye-teeth. In addition to linearity, a basic feature of LAN is that its character set (its range of symbols) conform to the restricted range that computers normally permit. The Study Group also set out to construct a LAN that, unlike some previous proposals, would be easily recognizable to the majority of actuaries.

CAN means Computable Actuarial Notation. This is a set of symbols that only actuaries who work directly with computers will need to use, or indeed be able to read. Its essential, as seen by the Study Group, is that LAN be translatable into

CAN by a purely automatic, routine process.

The Study Group has evolved notations designed to accomplish the above and other objectives, but emphasizes that the development of its notations is far from complete, and in no sense are they put forward as formal proposals for recommendations for change. The Study Group would, though, like to see its notations used in practical situations so that they can be refined and extended as a result of experience rather than theory. The Group hopes also to make available, in due course, a set of User Notes for actuaries who help the project along by carrying out experiments with LAN and, particularly, CAN.

In a follow-up article we will describe the Study Group's LAN in more detail.

E.J.M.

Wilson Report

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(4) Pension funds, says the Committee, should be required to make full regular disclosure to their members, including the results of the latest actuarial valuation. Thought was given to proposing some movement away from advance-funded to pay-as-you-go funds in view of the enormous assets and resulting economic impact of the former; but no such recommendation emerged. The view was expressed that the chief anomaly in private pensions is the freedom from tax that lump-sum benefits at retirement enjoy.

(5) The Committee recommended that the traditional tax relief given buyers for payment of life insurance premiums—a significant aid to selling policies with savings elements—be extended to some other forms of saving, even if this necessitates scaling down the size of the tax break given to life insurance premiums.

E.J.M.

Scoring Multiple-Choice Actuarial Examinations

The multiple choice examinations have created their own problems in scoring the answers to the questions. How the mystery, if any, is solved is the subject of the Supplement to this issue for which we are indebted to Messrs. Radcliffe and Nicodemus. □