

recognize and pronounce, but also from the Gothic alphabet, the names of whose letters are unknown to me and probably to most readers in this country. How can one think about a particular function which one cannot put a name to? This reinforces the proposition that every mathematics book should have a glossary which names and defines all symbols used.

To return to the specifics of Jeff Lange's paper, I should point out that the two dots used over a letter, as \ddot{a} , are a diaeresis, not an umlaut. (The umlaut is a substitute for the letter e following the letter so decorated.) Also, the distinction between a and \ddot{a} is not between "permanent and temporary annuities" but between annuities with payments beginning at the end and the beginning, respectively, of the initial period.

By this time you will have noticed that I have refrained from revealing my ignorance by attempting to comment on Jeff's suggestions with respect to a standard notation for casualty and property actuarial work. Actually, my reference to a manual of style for notation is pertinent here, although such a manual should have a broader sphere of applicability than the purely actuarial. Perhaps the ideal body to develop such a manual is a well-organized group of highly qualified professionals, such as our Society, with no vested interest in an existing code, and having expertise in the general field of mathematics. Such an endeavor could be undertaken with full regard for the idiosyncrasies of computers but without imposing limitations which may inhibit all generations up to the present and yet be of no consequence to machines of the near future. Do you remember the first color television sets with the mechanical color wheel?

DISCUSSION BY R. GUSTAVE OIEN

In his note, Mr. Lange has demonstrated diligent research on the problem of standardized notation for actuarial work. He has conveyed a sense of the history of the development of the notation used by life insurance actuaries, a sense of the utility derived from the standardization of that notation, and a sense of the problems which still exist in that area. The author develops the inter-relationship of the problems of standardizing notation for working purposes with those of standardizing expressions for use in computer language systems and those of reasonable notation for printing purposes.

Very appropriately, the author ends his note with several questions relative to the position of the property and casualty actuary with respect to the current revisions taking place in the standardization of life actuarial notation and, also, the development of a notational system for property and casualty actuarial work. The balance of this review consists of a response to these questions:

1. "Should casualty actuaries, either independently or through the Society, have any role in the development of the new notation?"

Individuals, through personal interest or their particular vocational situation, might well participate in this activity. However, it is the opinion of this reviewer that the Casualty Actuarial Society, as such, should not participate in this activity. This opinion is grounded in the belief that, though the kinds of activities engaged in by both life and casualty actuaries are similar, the main core of technical problems that each deals with has marked differences. In particular, that body of functional relationships which underlies life actuarial notation is, in this reviewer's opinion, relatively marginal to the total body of property and casualty problems and relatively central to the main body of life, health, and pension problems.

2. "Is standard notation needed for casualty and property actuarial work?"

It is difficult to argue with the advantages of such standardization as listed by the author. The author goes on to indicate that these arguments have not been compelling in the past. It might be possible that a more optimistic atmosphere would result if the scope of the notational standardization for casualty-property actuarial work were limited.

3. "If developed, should the casualty-property actuarial notation be a derivative of life, health, and pension notation?"

This reviewer does not believe that the casualty and property actuarial notations should be derivative of life, health, and pension notation. Again, this opinion stems from the belief that the differences in the problems underlying the two actuarial areas are of such a magnitude that such a derivation is not reasonable. However, this may be only a quibble over the use of the term "derivative." It would certainly seem desirable in developing a property-casualty actuarial notation system to keep overlapping areas consisting with the life notation, and in developing any non-overlapping notation, to avoid any ambiguity with the life notation.

4. "If the first three questions are answered positively, how might the problem of notation be studied further?"

Whether undertaken by an individual actuary, an informal group of actuaries, or a group of actuaries organized as a research committee under the auspices of the Casualty Actuarial Society, the job of developing a standardized notational system is formidable. This reviewer has no real answer.

Mr. Lange should be thanked both for the questions he has generated and the useful information he has presented to us in his "Actuarial Note on Actuarial Notation."