VALUATION

A. To what extent do small companies use approximate methods for valuing any of the following items, and what is the basis of such methods?
   a) Reserve for nondeduction of fractional premiums
   b) Reserves for reinsurance
   c) Deferred premiums
   d) Reserves for unreported claims
   e) Reserves for payor benefits
   f) Reserves for substandard business
   g) Reserves for paid-up additions
   h) Dividends apportioned
B. To what extent should a small company make provision for possible future settlement option losses on existing business not yet matured? How can you determine what constitutes reasonable provision for such losses in a small company?

MR. J. R. ADAMS, discussing some of the items under section A, stated that for reinsurance, both ceded and accepted, the National Guardian maintains a seriatim file of valuation cards showing the amount of insurance in successive calendar years for each policy. At the year end, these cards are tabulated by attained age, and factors representing one-half the one year term net premium for each age are applied; substandard extra reserves are computed from extra premiums. As to payor benefits, an approximate method is used for the Disability Waiver of Premium benefit. Average factors, derived from an actual valuation in November 1948, are used. It is expected that these factors will be used until 1952 when new factors will be derived from an exact valuation. For the extra reserve on substandard business, one-half of the gross extra premiums received during the year are set up.

For dividends apportioned, the method used is to derive average ages by year of issue and plan by means of an occasional ten-age calculation, and to apply approximate dividend factors based on such average ages to the November in-force, and thus compute the average dividend for each year of issue. These factors are then applied by year of issue to the in-force at the end of the year.

MR. N. T. FUHLRODT confined his discussion to the practice used by the Central Life in obtaining reserves for paid-up additions. He stated that an accurate valuation is made once every three to four years, and in the intervening period the reserves on paid-up additions are approximated.

The Company keeps a record of dividends left to purchase paid-up additions, the value of paid-up additions matured or surrendered, reserves released on death claims, and the reserve value of additions transferred and used as the initial reserve to purchase paid-up insurance on the basic policy. These items are carried separately for each mortality table and rate of interest.

The cost of insurance on paid-up additions is calculated whenever an exact valuation is made, and using this figure, together with the cost of insurance by class of business on the remaining insurance, it is a relatively simple matter to estimate the cost of insurance on the paid-up additions for the year of valuation.

The formula provided by the Instruction Sheet for preparing Gain and Loss Exhibit of the Convention Statement is solved for the current year's reserve as follows:

$$_nM = (1 + i)_{n-1}M + (1 + i/2)(P - R^T) - T^D - {_nC}$$

where

$$_nM = \text{Mean reserve December 31 current year}$$
$$_{n-1}M = \text{Mean reserve December 31 previous year}$$
$$i = \text{Valuation rate of interest}$$
$$P = \text{Dividends used to purchase paid-up additions}$$
$$T^D = \text{Reserves released at death}$$
$$R^T = \text{Reserves released by other terminations}$$
$$\text{(surrenders, maturities, etc.)}$$
$$_nC = \text{Cost of insurance during year (estimated)}$$

The cost of insurance is the only estimated item. An error of 10% in it would not result in an error in excess of $\frac{1}{8}$ of 1% in the reserve on paid-up additions. The error in estimating the cost of insurance does not necessarily occur in the same direction each year, so that the accumulated error at the end of three or four years is relatively small.

MISS GERTRUDE A. SCHLACHTER stated that since 1943 the ordinary policies of the Colonial have had no provision for the deduction of fractional premiums at death. This concession has now been granted to all ordinary policies issued prior to 1943. There are about 45 years of such issues, but the amount of insurance involved is only about $30,000,000. They have received permission from the State Insurance Department to estimate an over-all reserve factor to be applied to the total deferred premiums. This factor is determined before the end of the year, and is based on a projection of previous years' exact figures. This method was first used in 1948, and the factor was based on an exact valuation for the years 1946 and 1947. During 1949, an exact valuation was made for the

year 1948 in order to check the accuracy of the 1948 estimate and to give further information for an estimate of the 1949 factor.

This method has not eliminated any work, but has transferred it from year end rush time to the slack season. Eventually, the Company hopes to be able to establish a reasonable progression so that estimates may possibly be made for three years at a time, with an exact valuation only once during each three year period.

MR. L. S. NORMAN stated that it may be worth while to give up a little bit of arithmetical accuracy if it will help to relieve pressure at Annual Statement time. In the case of his Company, a 5% error in the same direction in every one of the items listed in this question would still only be $1\frac{1}{2}$% of surplus funds, or less than .2 of 1% of the total reserves.

He thought that there is inherent in the reserves themselves, even when computed as exactly as we know how, an appreciable probable margin of error. Necessarily, we compute the value of our future liability on a specific mortality assumption and specific interest assumption, but in hardly any case do we actually expect these assumptions to be an exact prediction of future developments. The idea that reserves are not very exact, no matter how precisely we calculate them, is one that might easily be misunderstood outside of the field of the actuary, and it would be wise not to give that thought too much emphasis elsewhere. However, the actuary should keep in mind that true actuarial accuracy may be quite a different thing from mere arithmetic accuracy. If an item should properly be measured by a yardstick, let us not hamper our efforts by using a yardstick with a micrometer tied to the end of it.

He suggested the following criteria which might be helpful in judging a proposal:

1. Will there be a real saving? It may be well to consider *whose* time is being saved, and avoid methods that might add to the load on our experts unless the saving in clerical time is very large.
2. Will the proposed method relieve pressure at a critical time? We should look for opportunities, whether or not by approximate methods, to get statement items done in advance, except, perhaps, for a final adjustment.
3. Will it avoid cumulative errors, by tying to known factors each year rather than carrying forward only from the preceding year's estimate?
4. Will it retain the advantages of consistency? Too many changes of method might lead to confused personnel as well as to spurious results if the approximated items are used in analytical studies.
5. Will it satisfy regulatory authorities as to adequacy? It has been his

observation that examiners generally react favorably to results that have been brought forth in good faith and are not designed to fool anyone.

MR. G. C. THOMPSON stated that the Security Mutual has regular paid-up life additions and paid-up Endowment additions, and also one year term additions. In all of these types of additions, they set up the in-force as of December 1, and consider that to be the in-force at the end of the year. Endowment additions are valued by classifying them according to the number of years to maturity. Reserves are then obtained by applying Paid-up Endowment at 65 factors, in general. There is little variation in this arrangement from year to year, and because of its satisfactory results the Insurance Department has acceded to its use.

With regard to substandard business, his Company had been using a flat percentage of the substandard extra premium. The Insurance Department felt that this was inadequate, particularly on the life plans. Accordingly, the Company made a study of its substandard business, dividing it into two groups, short term endowments (including Term) and all others. The "all others" group was further subdivided into Ordinary Life and Twenty Payment Life. Ordinary Life substandard extra reserves were used for Ordinary Life, Life Paid-Up at 85, Life Paid-Up at 65, etc. It was found that, by year of issue, there was not a substantial difference between the extra reserve factors for the 20 Payment and the Ordinary Life groups, and as a result, these were brought together, dividing the total extra reserves by the extra premium for a particular year of issue to obtain a factor per dollar of extra premium. The Department has accepted this method so that the Company's present method of obtaining substandard reserves is to carry a running in-force of the substandard premiums, to which are added the issues and cancellations during the year, divided into the groups (1) short term endowment, term, and flat extras and (2) Ordinary Life and all other plans.

In the short term endowment group, a factor of 65¢ per dollar of extra premium is applied; in the other group, the factors vary by year of issue, from 50¢ per dollar of extra premium in the first year of issue, to a maximum of $5.87 per dollar of extra premium after 20 years. It is the Company's intention to check these factors once each three or four years.

MR. W. A. JENKINS stated that by the time its annual statement is ready, Teachers Insurance and Annuity Association knows the total amount of dividends for January and February. The ratio of this total to the corresponding total for the previous year is applied to the total of

dividends for the whole of the previous year in order to obtain a figure for dividends apportioned.

MR. B. W. BATHO said that the Life Insurance Company of Georgia makes an accurate valuation of reinsurance once every three years. At other times, the net amount at risk is obtained for all reinsurance with premium due dates in *one* of the twelve months. The ratio of this amount to the corresponding figure at the time of the last accurate valuation is used as a basis for approximating the current reserve.

MR. R. H. NILES stated that the Standard determines deferred premiums as though there were no irregular premium payments off the anniversary date. Every three or five years an exact calculation is made of the irregular premiums to determine the difference between the advance and deferred premiums. This difference, which turns out to be a liability, is increased slightly to be on the safe side and is used each year until the next accurate calculation is made.

MR. G. F. KNIGHT commented on the problem of setting up reserves for delayed claims. He stated that the Berkshire has kept records back to about 1938 and has found that at the end of 15 days the Company has received notice on 80% of the net loss for policies on which death occurred prior to the end of the period. At the end of 20 days, 89% of the net loss has been received. Since they close the liability items for the Annual Statement on the 20th of January, it is possible to obtain, by a reserve for unreported claims on the assumption that 85% of the total claims have already been received, an adequate liability.