

DIGEST OF INFORMAL DISCUSSION

NEW MORTALITY TABLE

- A. Are statutory deficiency reserves necessary in practice? Is the adoption of a new mortality table the best solution to these deficiency reserve problems? Can the results be achieved in some other way? Could its use be limited to the calculation of deficiency reserves? Is a new table indicated for other reasons?
- B. What effect would legislation establishing a new table of permissive standards for reserves and nonforfeiture values have on (1) participating companies (2) nonparticipating companies? What would be the impact on dividend patterns in participating policies?
- C. Should a new table be expected to remain an appropriate standard for an extended period; or should new mortality tables be introduced as mortality rates improve (1) as permissive bases (2) as new standards? If mortality standards may fluctuate should not the standard for interest rates also vary?

MR. W. H. BITTEL opened the discussion by reading a statement contained in the report of the Insurance Commissioners' Subcommittee on Deficiency Reserves which had studied this problem. The substance of this statement was that the principle embodied in deficiency reserve statutes is sound and requirements of this kind are needed until a better method is found to assure that there will be funds on hand to maintain statutory reserves.

One alternative to the present statutory deficiency reserve requirement, which would probably be acceptable to supervisory officials, is a statute giving the commissioner the right to prohibit the issuance of contracts which are not self-supporting. New York has a statute of this nature. The effectiveness of such a statute would depend on the penalty for violations which would probably have to include the right to refuse to issue or renew the certificate of authority of the company issuing such contracts in any jurisdiction. Administrative procedure under such a statute would be difficult to formulate. A certificate of compliance, executed by a qualified actuary, would probably be accepted by the supervisory official.

The incidence of the improved mortality reflected in Table X<sub>17</sub> indicates that this table is needed at this time for reasons other than as a solution of the deficiency reserve problem. Of course the deficiency reserve statutes are of additional value in calling our attention to this need. The enactment of legislation authorizing the use of the new table on a

permissive basis would be very desirable since supervisory officials would then have a standard for measuring the performance of the companies which continue to use the 1941 CSO Table for some or all of their plans.

MR. C. A. ORMSBY felt that we should consider the complete elimination of deficiency reserve requirements at least with respect to future business. Some of the reasons are:

1. They are becoming a divisive force in the industry, resulting in discrimination between stock and mutual companies as well as between the older and larger stock companies on the one hand and the younger and smaller ones on the other. The present trend toward the gradation of gross premiums by size will accentuate this problem and result in greater discrimination.
2. They distort annual earnings, surplus positions and, in some cases, the incidence of gross premiums with respect to issue age.
3. They have been an artificial and undesirable barrier to justifiable rate reductions.
4. They tend to regulate rates, which is undesirable, and their effectiveness in this regard varies widely among the companies.
5. They prevent the justifiable use of modified reserve methods in some instances.
6. They contain many theoretical defects as follows:
  - a) It is possible that two mortality tables with different levels of rates but approximately the same slope will produce reserves which are about the same, but one table will involve deficiency reserves and the other will not.
  - b) Deficiency reserves are not required whenever the gross premium is at least equal to the net valuation premium. Thus renewal expenses which must be paid out of renewal premiums are disregarded.
  - c) The charge for the conversion option in a short period term plan may be the only factor which produces a gross premium greater than the net. The fact that the deficiency reserves might be required in the absence of such charges is ignored in practice.
7. They may discourage conservatism in the selection of mortality and interest factors for policy reserves.
8. For certain periods in the past they made it necessary to charge yearly renewable term reinsurance rates which were higher than necessary even though the mortality rates underlying the gross premiums for yearly renewable term reinsurance are distinctly higher than the mortality used to determine the rates for direct business. The reinsurance companies have circumvented this problem by announcing rate schedules which are guaranteed for only one year at a time. Such artificial solutions are undesirable.
9. They are a source of poor public relations and are confusing even to the more intelligent people, both within and without the industry.

The deficiency reserve requirement has been regarded as a necessary part of the system of reserves wherein credit is taken for future net pre-

miums. There is an implication here that the same mortality table is suitable for both gross premiums and valuation. For some time the life insurance business has actually used a dual standard with respect to its nonparticipating gross premiums and reserves. The adequacy of gross premiums is determined by current experience or current experience projected into the future. Valuation reserves are based on conservative standards so that in the aggregate they will be adequate and solvency will be assured. The main reason for this dual standard is convenience; and as long as there is no great disparity between the two bases, the dual standard has considerable merit. However, when current experience indicates that we can justify gross nonparticipating premiums less than the net of the valuation standard, the deficiency reserve problem becomes of importance and the dual standard no longer functions in a satisfactory manner.

Mr. Ormsby felt that if gross premiums which are less than the net valuation premiums can be justified on the basis of realistic assumptions as to mortality, interest and expense, it is not necessary or desirable to require deficiency reserves equal to the present value of all future deficiencies. The anomalous relation that exists between net and gross premiums when improvement in mortality is reflected in the one but not in the other should be accepted as an inevitable consequence of our dual mortality standards, and in the absence of any deficiency reserve requirements we should be able, without undue difficulty, to maintain sufficiently stringent criteria for solvency through regular reserves based on an acceptable valuation standard.

Deficiency reserves have been with us for a long time and a major education job would be necessary to eliminate them. There would be considerable opposition to their elimination, particularly from those who look upon them as a deterrent to the charging of inadequate rates. Mr. Ormsby felt that there were other and better means readily available to keep gross rates from being too low. One suggestion would be to require that a company not be permitted to adopt rates lower than the net rates of a modern mortality table unless it can demonstrate to the regulatory authorities that it can do so with safety. If we are unable to eliminate deficiency reserve requirements we will be faced with the unhappy prospect of more frequent revisions of our valuation tables in the future than would otherwise be necessary.

If it is possible to eliminate present deficiency reserve statutes, the change would probably apply only to future business and for practical reasons it might not be possible to return existing deficiency reserves to surplus. Because of this it would seem very desirable to effect this remedial legislation as soon as possible.

MR. R. H. JORDAN felt that deficiency reserves are necessary in practice because such requirements act indirectly to set minimum rates. Rate regulation of some type is desirable and necessary to keep management aware of its responsibilities to maintain an adequate surplus and to avoid the possibility of overindulgence in optimism, particularly in smaller companies which may not have adequate facilities or personnel for sound analysis of their actual experience. He felt that the automatic and indirect regulation inherent in the deficiency reserve requirement is more desirable than any attempt at direct control of rates. Direct control does not exist currently to prevent a small company from adopting rates that are not self-supporting and the insurance departments are understandably reluctant to enforce such controls as are available. In view of the highly competitive atmosphere now prevailing, some sort of automatic safeguard is required.

The difficulties arising from deficiency reserves result from the fact that the deficiency reserve requirement is currently related to the valuation basis adopted by the company rather than the minimum valuation basis and the requirement is based on a mortality table for valuation purposes containing mortality rates having a margin greater than that necessary to assure solvency. He felt that the deficiency reserves should be related to the basis on which solvency is determined, that is, the minimum reserve valuation basis, and that the use of the mortality table for valuation purposes with rates considerably higher than those currently experienced has caused the deficiency reserve requirement to come into play far too soon. This latter problem would probably continue to occur where a modern table such as Table X<sub>17</sub> is used for valuation if the deficiency reserve requirements are not changed to relate to the minimum valuation basis. As a result, the introduction of a new table would provide only a partial solution to the current problems involving deficiency reserves.

Mr. Jordan felt, however, that there are many objections to the adoption of Table X<sub>17</sub> which may negate whatever value its use might have toward solution of the deficiency reserve problem. These objections center on the fact that calculations of nonforfeiture benefits and gross premiums are still effectively tied to the reserve basis. Some of these objections are:

1. Adequate margins would not be available to cover expenses and, in the case of extended term, adverse mortality experience.
2. For practical reasons the same mortality table must be used to calculate both reduced paid-up and extended term insurance benefits. This is highly unsatisfactory if the mortality table used contains rates very close to current standard experience since the resulting extended term periods will be excessive.
3. The expense of rate calculations and preparation of a new rate book would

be far too great as compared with the relatively small problem which adoption of a new table is designed to solve. The small companies would be particularly hurt.

4. The entire industry is asked to incur costs associated with a shift to a new valuation basis for the benefit of a relatively small number of companies.

Mr. Jordan felt that the solution to the "deficiency reserves-new mortality table" problem appears to be in two steps.

1. Change deficiency reserve requirements to relate to the minimum valuation basis rather than the stronger valuation basis voluntarily adopted by the company.
2. Complete the job of divorcing nonforfeiture values from reserves.

In discussing section B, Mr. Jordan stated that the desire for good public relations and agency demand would result in the new permissive basis becoming more or less a mandatory basis for premiums and values for all companies within a short time. In his opinion this is unfortunate because it would require a new series of policies having different values, thus requiring expensive calculations which would have to be reflected in the premiums charged or the dividends allowed.

Even for companies issuing participating business it would change the level of their gross premiums. This would require new dividend scales reflecting the new valuation basis. For life plans the reserves on the new basis are generally lower and he would expect the cash values to be lower and dividends higher. For coterminous endowment plans the reserves are generally higher and he would expect the early dividends to be somewhat lower, but late dividends to be higher. The net result of all these changes would have little effect on the total cost of the insurance to the policyholder. The policyholder would be affected only by a change in incidence rather than a change in actual cost itself.

If Table X<sub>17</sub> is adopted, he felt that some companies may have a serious problem with respect to determining the mortality rate to be used for dividend purposes, because it is entirely possible for dividend mortality rates under current conditions to exceed the rates of Table X<sub>17</sub>. This situation would arise from the fact that most companies use a 15 year select period in their asset share calculations and charge ultimate mortality rates for a policy 16 years and older in the dividend formula. Since Table X<sub>17</sub> is based on durations 6 and later, it is possible that the rates, even though they are loaded, may be lower than individual company rates for policy years 16 and later at some points.

MR. E. F. ESTES suggested that we should re-examine our thinking with reference not only to the present competitive problem and its rela-

tionship with Table  $X_{17}$  and deficiency reserves, but also to the much broader area of which it is a part.

A deficiency reserve statute is an integral part of the theory underlying the American legal reserve system. The present laws are *not* inadequate for meeting present rate competition if the size of the premium is of chief concern. A number of companies have recognized this fact, testing gross premiums against CSO  $3\frac{1}{2}\%$  or CSO  $3\%$ . However, the deficiency reserve law itself, as now worded, is inconsistent with other related parts of the standard valuation law because it requires a deficiency reserve if the gross premium is less than the valuation net premium according to the valuation reserves held by the company. He suggested rewording the law so that in effect deficiency reserves would be required only if the gross premium is less than the tabular net premium computed using the maximum ( $3\%$  or  $3\frac{1}{2}\%$ ) valuation interest rate.

Turning to Table  $X_{17}$ , Mr. Estes noted that criticism of its use as a valuation table is not confined to a limited group of companies or a limited geographical area. He felt that such criticism is not directed at the Committee of the Actuarial Society; that this Committee had carried out its first and seemingly major assignment. However, he felt it is unfortunate that what seemed to be the practical aspects of the deficiency reserve problem, in his opinion, finally dictated the new mortality table. He felt that there would have been no demand for a new table at this time, had there been no deficiency reserve problem, and that any table which would not solve this problem, regardless of its other characteristics, would probably not have been acceptable.

Some of the most frequent criticisms of Table  $X_{17}$  are:

1. The table goes too far in lowering tabular net premiums, especially on low premium plans at the younger ages.
2. It provides too long periods of extended term insurance.
3. The mortality margins at the higher ages are inconsistently high.

Mr. Estes then presented a modified Table  $X_{18}$  which he had developed with a constant and percentage type of loading to the basic  $q_x$ 's from Table  $X_{18}$ . He used a percentage loading of  $5\%$  and a constant loading of  $.002$  for ages 0 to 89, inclusive. Above age 89 both the percentage and the constant increase by a curve with constant second differences to produce a value of  $q_{99} = 1$ . The margins in this modified table are not less than \$2.00 per \$1,000 per year, compared to Table  $X_{18}$ . In comparing the dollars-per-thousand-per-year margins of the modified Table  $X_{18}$  over Table  $X_{18}$  with those for the CSO Table over the basic table from which it was derived, he found that the modified Table  $X_{18}$  had larger margins than the

CSO Table up to age 40. From ages 40 to 60 the two tables had approximately the same margins and above age 60 the margins in the CSO Table gradually become greater, reaching a maximum excess at age 88 and then diminishing rapidly. He presented with his discussion a set of commutation functions at 2%, 2½%, and 2¾% on the modified Table X<sub>18</sub>, along with net premiums and terminal reserves for illustrative ages and durations on the Ordinary Life plan and net term single premiums for extended insurance comparisons.

Mr. Estes concluded his discussion with the thought that perhaps the industry needs a complete appraisal of the whole philosophy of valuation mortality tables as used in conjunction with governmental regulations now existing. Such appraisal might likely come up with new and useful ideas and techniques. Perhaps the use of projected tables would result. He felt that we need to develop better answers to the questions, (a) "What are the criteria for valuation of benefits offered?" and (b) "How can we best meet these criteria?"

MR. G. H. DAVIS, commenting on section A, felt that present statutory requirements of most states for deficiency reserves are entirely unsound, although he agreed that there may be some argument that it is desirable to have statutory authority which can be used to require such reserves in certain unusual situations. This unsoundness is illustrated by the fact that a company's rate schedule may be such that deficiency reserves are not required if the valuation is at 3%, but are required where the valuation is on a more conservative basis such as 2½%.

This situation arises from the fact that the statutes base the test on the actual valuation standard chosen. He outlined various approaches which might be used to alleviate the deficiency reserve problem.

Base the test for deficient premiums on a specific standard stated in the statute, possibly the minimum valuation standard. The desirability of stating the standard in the statute is questionable, however, because the outlook as to future mortality, interest and expense is constantly changing.

Introduce a statute similar to the provision in New York's section 213 which prohibits the issue of any policy which does not appear to be self-supporting on reasonable assumptions as to interest, mortality and expenses. He noted that most Canadian provinces have a similar statutory requirement. Such a statute would not necessarily entirely eliminate the need for deficiency reserves. For example, the premium might be adequate at issue but become deficient because of change in conditions subsequent to issue. It might be desirable to combine the prohibition on issue of policies with deficient premiums with a requirement for additional reserves if the premium becomes deficient after issue.

In Canada, the Dominion Law requires the actuary of a company to certify as to the adequacy of the company's reserves. The idea of depending upon actuarial certification is foreign to the American system of insurance regulation, but without adopting it we might consider the desirability of a statutory requirement that the reserves "make a good and sufficient provision for all unmatured obligations of the company."

Mr. Davis felt that either of these approaches is much preferable to present statutory requirements. The difficulty with these approaches is that they would require amendment of the laws of nearly all states. In view of this difficulty, the adoption of a new mortality table on an optional basis seems to be the best practical solution of the deficiency reserve problem. It is rather unfortunate that the adoption of this table is tied up with the deficiency reserve problem because there is much to be said for the introduction of the new table apart from the question of deficiency reserves.

MR. RICHARD HUMPHRYS stated that there have been no statutory requirements in Canada requiring deficiency reserves since the present valuation provisions were adopted in 1927. Thirty years of experience without such requirements lead him to answer "no" to the question, "Are statutory deficiency reserves necessary in practice?" He suggested that a broader approach to the whole matter of statutory valuation provisions, including within it relatively simple means of adopting new mortality tables, would present the best solution to the problem arising from requirements for deficiency reserves. He suggested an approach similar to that in Canadian legislation, outlined as follows:

This legislation leaves it to the company to choose a mortality table, a rate of interest and a valuation method subject only to certain conditions:

1. The mortality table is to be chosen from among the tables listed in the Insurance Acts, or if a company thinks that none of these tables is appropriate, any other table approved by the Superintendent of Insurance on application by the company.
2. A rate of interest not to exceed  $3\frac{1}{2}\%$ .
3. A method of valuation which would not produce reserves less than those that would result from using the method of valuation described in the Acts. The method of valuation adopted must also make adequate provision for the guaranteed values.
4. The actuary of the company must certify that in his opinion the reserves are adequate for all the unmatured obligations of the company guaranteed under the terms of its policies.



A company may choose any table from the list or if none of them is appropriate, it may use the table it considers to be appropriate, subject to approval of the Superintendent of Insurance. This makes it possible to adopt a new mortality table with relative ease, and thus, from time to time, employ a mortality table for reserve calculations which will avoid the appearance of valuing a net premium greater than the gross premium actually being received. Adopting a new mortality table may not solve all the problems, since the problem of computing reserves on a new table is still formidable for many companies. Also, problems of deficient gross premiums may arise when reserves are being strengthened by lowering the valuation interest rate.

The Canadian legislation meets these problems by considering the adequacy of the reserves as a whole and not concentrating attention on any one part of the reserve formula. The actuary is required to certify that the reserves carried in the statement make sufficient provision for the liabilities. This, together with the requirement that the reserve must never be less than the cash value, has proved to be sufficient to insure satisfactory reserve standards.

The requirement for statutory deficiency reserves really converts the valuation from a net premium valuation into a kind of gross premium valuation, but of such a kind that it has no real meaning. He concluded that, in general, deficiency reserves are not necessary and that sound reserve standards can be secured by other means than attempting to prescribe specific and narrow reserve standards in the legislation. He noted, however, that the environment in which the Canadian valuation provisions operate is not one that includes a large number of newly formed companies, although it does include a number of very small companies.

MR. RALPH KEFFER of the Connecticut Insurance Department stated that the use of the term "deficiency reserves" and the question of whether or not deficiency reserves are required appear to be extraneous to the real problem. The requirement of a minimum standard for reserves means that the reserve funds held by the company together with premiums to be received in the future must be adequate to enable the company to meet its death claim obligations provided the number of deaths experienced in the future is equal to the expected deaths computed according to the minimum standard.

Reserves are equal to the value of future benefits less the value of future premiums. If a company will not receive premiums at least equal to the net premiums, then the required reserves must be greater than the tabular reserves. The only way that the lower reserves that would result from the elimination of the deficiency reserve requirement can be justi-

fied is upon the assumption that present minimum standards make provision for higher mortality than is necessary. This was the belief of a committee of competent actuaries who proposed mortality rates according to Table X<sub>17</sub> as a safe, reasonable and proper minimum standard to be used in lieu of the CSO Table.

MR. A. L. BUCKMAN noted that there had been considerable support to an idea which he had suggested four or five years ago that the deficiency reserve law should be amended to establish as a base the minimum premium permitted by present statutory requirements. He felt, however, that the whole concept of deficiency reserves is unsound and that these requirements imply a mathematical precision which may likely be artificial because the underlying mortality table is unrealistic. He felt that we should re-examine the whole question of what we are attempting to do when we set up reserve requirements. We must look at this problem from a long range point of view. The deficiency reserve requirement as it now exists serves only to establish a minimum rate requirement. If we wish to do this, we should do so directly—for example, establish a minimum rate which a company may charge as that which is produced on a modern mortality table, with, say,  $3\frac{1}{2}\%$  interest and require that no company can file a policy with the premium rate structure less than these minimum requirements. He recommended that the Society undertake to publish a new mortality table, say, every five years. This table would not be for reserves but would be used as a basis of determining whether the current premium structures used by the company are adequate.

MR. H. F. ROOD noted that the discussion on this topic was very similar to the discussions that took place 30 years ago in connection with the possible use of the American Men Table.

He expressed concern with regard to the question of rate regulations. He is opposed to rate regulation because it would involve 48 different state regulations and also because of the problems it would create for non-participating companies if the statutes were not kept up to date. Companies selling participating policies could readily adjust net costs to reflect current conditions through the use of dividends, but the cost of non-participating insurance could not be reduced without first changing the laws of all the states.

MR. W. C. BROWN, commenting on section A, included himself among those who believe that deficiency reserve statutes are no longer necessary. He felt that there are much better ways of imposing the lower limit on the level of premiums, such as a statute which prohibits the issue of any contract which does not appear to be self-supporting. He thought the best solution to the deficiency reserve problem is to repeal the statutes,

but recognized that that might be difficult to accomplish and concluded that the adoption of a new table is the only other direct and satisfactory approach.

He felt that the need for a new valuation table has been amply demonstrated by the tremendous improvement in mortality which has taken place since the time of the basic data underlying the CSO Table reflecting experience more than 20 years ago. The Colonial Life's mortality experience for the period 1950-54 was about 40% by number and 44% by amount on the CSO Table. Many other companies have similar or better experience, demonstrating that the CSO Table may no longer be suitable for valuation.

The safety of a valuation standard depends upon the slope of the mortality curve compared with the actual mortality being experienced, rather than on the actual level of mortality being assumed. The safest valuation table is the one which most closely approximates the actual experience. This factor indicates the need for periodic revision of the valuation table.

Mr. Brown felt that a new table will eventually be adopted but that it should be permissive rather than mandatory.

He indicated that a good deal of the opposition to the adoption of a new table seems to stem from the fear that this would be followed by competitive price cutting that would ruin the small companies. In his opinion this fear is greatly overrated and he has been able to give some assurance to the smaller companies that the large nonparticipating companies would not produce premium rates lower than those justified by their own experience even if the deficiency reserve statutes were repealed or a new mortality table adopted. Similar assurance along these lines should be given by the representatives of the larger companies.

The present deficiency reserve statutes and minimum valuation table limit the ability of nonparticipating companies and, in particular, the smaller nonparticipating companies, to produce premium rates for larger average size policies based on their own experience. It is against the public interest for some companies to be so restricted and against the public interest that their policyholders should be unable to purchase insurance at premiums as low as they could otherwise offer. He warned that the industry could not stand in the way of progress which would be represented by a more modern valuation table, without possible serious repercussions from the federal government. We should recognize the inevitability of progress and press for the adoption of a new table while it is still useful.

MR. LOUIS LEVINSON, commenting on section B, pointed out that, if Table X<sub>17</sub> becomes a permissive standard, companies will be faced with

the choice of adopting the new table or keeping the old. Companies faced with the deficiency reserve problem may be able to reach a decision on that account. Participating companies generally would want evidence of other advantages before selecting a new table. There are no ready answers to this particular question, but there are a number of factors which will be affected—among them, net premiums, reserves, nonforfeiture values, dividends and surplus.

Savings developed from favorable mortality have provided a safety margin available for any contingency, such as adverse fluctuation in mortality, asset shrinkage, and even inflation. The existence of these savings and their magnitude has influenced our thinking as to the appropriate level of contingency funds. The adoption of a new table would result in a reduction in reserves of from  $2\frac{1}{2}\%$  to  $3\%$ . This is equivalent in amount to from  $30\%$  to  $60\%$  of the contingency funds held by representative mutual companies. A reduction of this size in reserves, if not accompanied by a comparable increase in contingency funds, would represent a very substantial diminution in surplus. If a company's philosophy of surplus has been deliberate and is held fast, the company would properly increase its contingency funds to offset the drop in the periodic gains from reserves. The adoption of Table X<sub>17</sub>, in itself, consequently, would not warrant a significant lowering of net cost to policyholders; however, it may suggest reductions in gross participating premiums which would have a significant effect on the character of the dividend scale.

Experience of the 1930's and 1940's shows that not all tables used for policy values, conservative though they may be, produce equally suitable dividend scales. Thus, the American Experience Table which had served well under many varying situations exhibited unwelcome features when the drop in the rate of interest brought the mortality component of the dividend into greater prominence. This difficulty stemmed from the fact that the experience mortality which was substantially lower in the young ages approached the American Experience Table as age increased, resulting in mortality gains which decreased with age. This circumstance was aggravated by diminishing amounts at risk. The degree to which this occurred may be illustrated by the dividend mortality returns on current experience based on policies valued on different mortality tables as shown in the table on the following page. The experience mortality used in this illustration is the average of the rates in the 1956 dividend scales of ten mutual companies.

It will be observed that, in the interval between ages 40 and 50, returns under American Experience mortality decline by 45¢ per \$1,000. In the case of an Ordinary Life policy issued at age 30 on the American Ex-

perience 3% basis the mortality return drops from \$6.02 in the 10th year to \$4.59 in the 20th. An excess interest rate of almost 1% is necessary to offset this decline. The CSO Table provided increasing mortality gains over modern experience from the early adult ages to the end of life. Table  $X_{17}$  for the most part produces mortality returns increasing with age, but the increases are quite small over several areas. They do not increase enough to assure us in the event of continued mortality improvement or a turn in level of interest rates that dividends would progress the way we like. The smallness in the mortality margins under Table  $X_{17}$  would reduce participation in that respect under present experience levels to almost

AGE	TEN-COMPANY AVERAGE RATE PER 1,000	RETURN PER 1,000 OVER TEN- COMPANY AVERAGE RATE		
		Am. Exp.	CSO	$X_{17}$
20.....	1.14	6.67	1.29	.32
25.....	1.32	6.75	1.56	.37
30.....	1.53	6.90	2.03	.29
35.....	1.96	6.99	2.63	.31
40.....	2.84	6.95	3.34	.46
45.....	4.56	6.60	4.05	.50
50.....	7.28	6.50	5.04	.56
55.....	11.75	6.82	6.23	.80
60.....	18.96	7.73	7.63	1.24
65.....	29.89	10.24	9.75	1.86
70.....	46.53	15.46	12.77	3.26
75.....	71.48	22.89	17.16	1.89
80.....	109.10	35.37	22.75	.88

nominal proportions. Much more weight would have to be given to increasing returns of loading to produce dividends increasing with duration. This circumstance might operate to maintain gross premium levels.

The use of Table  $X_{17}$  would introduce other dividend problems. Smaller reserves would yield smaller excess interest contributions unless some effect were given to the excess surplus which might be called for. The smaller cash values resulting from the new table might have difficulty competing with the guaranteed higher cash values produced by the CSO Table. Table  $X_{17}$  does not appear to offer strong practical advantages over the CSO Table for participating policyholders considered collectively or individually. Its adoption by a company would not enable it to offer insurance at a lower price than it otherwise could, and the product that it would offer might not be so attractive.

In discussing section C, MR. W. H. BITTEL pointed out that whenever a new mortality table is advocated there is considerable reluctance

to accept the concept that a new table is needed or that the use of any such table should be mandatory by some specific date. He then discussed the basic consideration which he felt would establish a pattern that can be used to find the answers to the question of when a new mortality table is needed and also whether such table should be a permissive or a required standard.

Theoretically it should be possible for participating insurance to preserve equity through dividends regardless of any changes which may occur in the incidence and level of mortality; however, as a practical matter, the adjustments needed would become prohibitive at some point and it would also become increasingly difficult to convince supervisory authorities that a satisfactory job is being done.

In his opinion a new statutory mortality table is needed when the procedures required to preserve equity become so costly and so complicated that it is difficult for those responsible for company operations and those charged with supervision to be satisfied that reasonable equity is being maintained. In the case of nonparticipating policies the need for a new table arises much sooner because it is not possible to make all the necessary adjustments as in the case of participating policies. Consequently when a new mortality table is proposed as in the present instance to meet a situation in the case of some policies on a nonparticipating basis, it is not necessary that its use be required for participating policies as long as it is possible for dividends to reflect the necessary adjustments without complicated and expensive procedures.

In discussing the maximum rate of interest set by the statutes relating to nonforfeiture benefits and reserves, Mr. Bittel concluded that it would probably be desirable to have the statutory interest standard reflect current trends, although changes in this standard would not generally coincide with changes in the mortality standard. Furthermore, it would appear to be much more difficult to determine when an increase or decrease in the statutory standard which represents a maximum limit instead of a required basis would be needed. He felt that those states which now have a statutory maximum of 3% might wish to consider raising this rate to  $3\frac{1}{2}\%$  at the time the new mortality table is made a permissive statutory standard. His idea is that the statutory maximum interest rate should remain at  $3\frac{1}{2}\%$  even when a lower standard might be desirable, and the regulatory statutes should have enough flexibility to permit an insurance commissioner to prohibit the issuance of contracts guaranteeing the maximum rate when such a guarantee cannot be justified on the basis of current and projected interest earnings.

MR. A. N. GUERTIN introduced his discussion of section C by read-

ing from a report dated September 10, 1941 to the National Association of Insurance Commissioners by the Committee to Study Nonforfeiture Benefits and Related Matters. In this report the Committee stated that it is proper that changing rates of mortality be recognized and that provision be made for periodic review of mortality. The Committee report also included a provision for periodic revision of tables in its model legislation. He pointed out, too, that both the American Life Convention and the Life Insurance Association of America are on record as recognizing the need for periodic revision of mortality tables, although they did oppose such revision being established by legislative mandate.

Mr. Guertin agreed that the question as to just how long a mortality table should continue in use before revision is very difficult to answer. In reviewing past experience on this question he pointed out that the life insurance business paid heavy penalties in the form of bad publicity because, after much debate, the NAIC failed to adopt the American Men Table which was presented in the early 1920's. As a result of this failure the companies had to specify the American Experience Table in their policies because of existing statutes and thus were unable to inform their policyholders directly that the business was, in fact, using measures of mortality based on modern experience.

Mr. Guertin expressed the opinion that revisions of mortality tables from time to time are helpful for the life insurance business so long as such tables are constructed on the basis of adequate statistics reasonably representative of current conditions, that the methods of construction are conservative in approach and that they take into account all the uses to which a table is to be put. When such a revision should take place and whether such new tables should be on a permissive or mandatory basis are moot questions.

In his opinion it would seem that the time to check into the matter is when important actuarial artificialities must be introduced to offset the inaccuracies introduced by the use of the table and these tend to become general in the life insurance business. If it is found that the use of the statutory table causes companies to make unreasonable assumptions in actuarial calculations, to vary forms of contracts into awkward arrangements which they would not adopt if they were permitted to use currently representative standards, the time has probably come when the matter of revision should be given consideration. If artificialities in interest or loading assumptions must be introduced to produce equity, then the matter needs examination.

Mr. Guertin stressed the importance of understanding that while Table X<sub>17</sub> came into being as a result of the problem involving deficiency reserves, it was designed as a table for general valuation use by any com-

panies which might wish to use it. It was not designed as a cure-all for the deficiency reserve problem, but he felt that this problem itself was symptomatic of the fact that the CSO Table is now almost as obsolete as was the American Experience Table when the CSO Table was constructed.

He pointed out that it did not appear necessary to adopt a new mortality table simply to avoid setting up deficiency reserves. This problem can be alleviated in many instances by changing from a preliminary term valuation method to a net level basis or by adopting higher interest rates for reserves or by some other technique of offsetting assumptions which will develop satisfactory results.

Practical considerations would seem to largely dictate whether the revisions of tables should be on a mandatory or permissive basis. Legislation in 49 jurisdictions cannot be accomplished at a single stroke. The technique used on the CSO Table was to allow a six year permissive period with adoption mandatory at the end of that period. If a mandatory date were to be adopted with respect to a new table, he would anticipate that the mandatory date would be set forward even more than six years, since the problem, while important, is not as urgent from a public relations standpoint as it was in the early 1940's when the CSO Table was being considered. However, competition can be an important consideration, and should a new table be made available on a permissive basis there seems little doubt that it would come into general use before too many years.

Mr. Guertin pointed out that the NAIC Committee which produced the CSO Table was of the opinion that the requirement for valuation of policy reserves and determination of nonforfeiture benefits need not be made on the basis of the same mortality table and rate of interest. An extension of that point of view to the problem of mandatory or permissive use of the mortality table would suggest that the table available for valuation or for the calculation of nonforfeiture benefits or for the calculation of extended insurance might be independently subject to revision from time to time. When the appropriate time arrives would depend on the suitability of the current use of the existing standard for the area to which it applies. Currently we have seen symptoms of dislocation with respect to reserves. We have not seen any with respect to the valuation of nonforfeiture benefits. However, political considerations being what they are, the Society Committee which produced Table X<sub>17</sub> saw to it that, should the table which was devised as a permissive valuation standard be extended to other uses, such as the calculation of nonforfeiture benefits, its nature was such that it would serve that purpose without damage to the life insurance business.

Commenting on the last part of the question, which deals with the pos-



sible revision of interest rates, Mr. Guertin read an extract from the report of the committees of the ALC and LIAA which pointed out that changes in the statutory interest rate may be necessary from time to time and that these changes would have to be made by statutory amendment. This type of statute is somewhat different from that related to mortality, since it authorizes the use of any rate of interest so long as it does not exceed a fixed maximum. Such a limitation is adequate to permit companies to adopt realistic interest rates following their own estimates of future earnings. Thus, in many jurisdictions a company can use an interest assumption as high as  $3\frac{1}{2}\%$ —a rate which contemplates average net interest earnings in the future of as high as 3.79% before federal income tax. From a regulatory standpoint it might be that the maximum rate might need to be changed from time to time, but such changes arise purely from supervisory considerations rather than from operating considerations.

In the case of mortality standards, however, a different situation develops. No single table will give higher reserves, higher cash values, larger amounts of paid-up insurance and longer terms of extended insurance for every plan and every age than a table written into a statute. No alternative table, therefore, seems to fit unless the limitations are established in terms of aggregates and this is a means specified in the standard valuation law. Even though a table may be suitable from a supervisory standpoint, it can become unsuitable from an operating standpoint, and that is apparently what has happened currently in at least one phase of our business.