

PREMIUMS AND RESERVES FOR NON-CANCELLABLE
ACCIDENT AND HEALTH POLICIES.

BY

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The difficulty that confronts the actuary in preparing tables of net premiums and reserves for non-cancellable Accident and Health policies lies in the absence of any published sickness tables compiled from experience in this country suitable for the purpose.

Until recently but little, if any, disability insurance has been issued by American companies under the non-cancellable form. It is true that a great volume of Accident and Health insurance has been in force in American companies for many years, but this insurance has been written under policies which give the insurance companies the right to cancel at any time and which restrict benefits, for the most part, to payment of indemnity for disabilities that last longer than a year to fifty-two weeks.

The existence of these two restrictions in the policies heretofore issued makes the experience under the so-called Commercial Accident and Health policies of doubtful value in determining rates for the non-cancellable form of Health insurance.

Non-cancellable insurance is issued only to applicants who can successfully pass a rigid medical examination, and it may be anticipated that for a year or two after this medical examination there will be experienced a very low rate of disability, lower than that under cancellable forms of disability insurance written without medical examination. But after the effects of medical selection have worn off, it may be anticipated that the periods of disability, on the average, will be much longer than we might be led to expect from an examination of our past experience under cancellable forms. This will be so because it will be impossible to eliminate cases of prolonged sickness and cases of total and permanent disability, which it has been possible to avoid heretofore when such disabilities have been preceded by temporary sicknesses.

In a recent report made by a Committee on Statistics of the

Bureau of Personal Accident and Health Underwriters an analysis of a large body of claims disclosed the fact that of the payments made under policies issued with benefits payable for not longer than fifty-two weeks approximately 50 percent were for the first two weeks of sickness, 70 percent for the first four weeks of sickness and 90 percent for the first thirteen weeks of sickness. This analysis was not available by attained age of the insured. For the reasons stated above, I believe that it would be unsafe to assume that the elimination of payment of indemnity for the first few weeks of sickness under non-cancellable Health policies would warrant any such reductions in premium as the committee's analysis would seem to indicate.

The Metropolitan Life Insurance Company have insured all their Home Office employees since 1915. Through their courtesy, I am permitted to state that their actual claims, amounting to \$96,000, among Home Office men for the years 1915 to 1918 (and 1918, the epidemic year, showed no worse than prior years) were 94 percent of the expected by the Manchester Unity A. H. J. group. A surprising feature of this experience is that the claims in the first three months of sickness were but 73 percent of the expected and in the sickness after three months they were 150 percent of the expected. Too much weight can not be given to this experience, because the exposure was comparatively small. I have not the number of years exposed, but the amount of claims paid in the first three months of sickness was \$53,000 and for sickness after the first three months \$43,000. The experience is an indication of the unsuitability of our experience under cancellable Accident and Health policies for the calculation of premiums for long-term contracts.

There being no available experience in America, the natural course is to use, for the present, the best available abroad. In England the most suitable table seems to be that of the Manchester Unity Friendly Society. Members of this Society (which is a mutual benefit association drawing its members largely from the industrial classes) were only admitted upon a certificate of good health from a medical practitioner, and no sickness benefits were paid until after the completion of six months' membership. Benefits were payable throughout disability, however long it lasted, but the benefit was successively reduced with the duration of disability, so that it is believed that malingering was largely eliminated. Indemnity was paid for disabilities arising both from sickness and

from accident (occupational and non-occupational). The fact that the experience is upon industrial lives does not in itself necessarily make it unsuitable for use in computation of premiums for the professional classes, salaried employees and business people, among which classes non-cancellable Health insurance will, for the most part, be sold in this country. Among persons not engaged in extra-hazardous occupations, perhaps 87 percent of the total disability experienced arises from sickness and 13 percent from accident, and it is not believed that there is very much variance in rates of sickness between industrial workers and other classes of society. Moreover, the latest published experience of the Manchester Unity (covering the five years 1893-1897) is grouped according to hazard of occupation. The A. H. J. group covers the experience in non-hazardous occupations and in agriculture. In this group approximately one fifth of the exposure was upon agricultural workers.

Mr. James D. Craig, in his paper to the Actuarial Society submitted at their fall meeting in 1914, discusses the suitability of the Manchester Unity tables. He quotes from Mr. Dawson in the *American Labor Legislation Review* of March, 1914, as follows:

"Sickness Insurance Tables are entirely wanting in the United States, or virtually so, but the following tables prepared by me from American data are about to appear:

"a. Disability experience (comprising both sickness and accident) of the Brotherhood of Locomotive Engineers.

"b. Disability experience (comprising both sickness and accident) of the Westinghouse Airbrake Company's relief fund.

"The first of these is being published by the Bureau of Labor Statistics; the second I have been authorized to turn over to them for publication also.

"The engineers' experience is, of course, highly restricted, but the other experience is perhaps fairly representative of sickness rates of mechanical industries. It is interesting to note that it corresponds reasonably with the experience of British Friendly Societies."

He also quotes the late Mr. Messenger from his paper on the sickness experience of the Travelers' Life Insurance Company as follows:

"It is quite probable that if the Travelers' general health business should ever become as old as that of the Manchester Unity, its rate of sickness would approximate that of the Manchester Unity from 1893-1897, making allowance for the fact that the health policy does not cover disability from accident."

A considerable volume of Group Health insurance has been written in the past year or two, and the rates for this insurance were based upon the Manchester Unity A. H. J. group. Indications are that the experience on the best class of risks will follow the Manchester Unity fairly closely for the first fifty-two weeks of sickness.

An examination of the rates being charged for non-cancellable Health insurance by companies now transacting it discloses most astonishing differences of opinion. Below are given the rates of one American company compared with the rates quoted by three other American companies for a policy paying indemnity of \$10 a month for as long as disability lasts, provided disability occurs before age 65.

Age at Entry.	Rate Charged by Company A.	Rate Charged by Companies B, C and D.
20	\$ 4.17	\$6.00
30	5.26	6.00
40	7.23	6.00
50	11.03	6.00

Nothing, however, is paid for the first two weeks of disability.

For a similar policy, except that nothing is paid for the first thirteen weeks of disability, are shown below the rates for seven companies designated E, F, G and H and B, C and D.

Age at Entry.	Rate Charged by Company E.	Rate Charged by Company F.	Rate Charged by Company G.	Rate Charged by Company H.	Rate Charged by Companies B, C and D.
20	\$2.29	\$2.53	\$2.46	\$2.62	\$2.00
30	3.23	3.34	3.57	3.34	2.00
40	4.83	4.95	5.38	4.99	2.00
50	7.50	7.59	8.58	7.57	2.00

Companies E, F, G and H are British companies. It will be noted that there are most glaring discrepancies between the British rates and American rates. The business is new in America, but the British companies have had a considerable experience with it. The policies issued by the American companies are more liberal in their terms than those written by the British companies. Moreover, the policies of the British companies provide that no payments will be made after the age of 65, while the American companies pay throughout duration of sickness, provided only that the disability starts before age 65.

An examination of the above rates shows that the British companies have based them upon the Manchester Unity or upon a table of sickness departing not very far from it. American companies, for the most part, are charging the same rate for all ages at entry. This course can be justified only if it can be shown that sickness rates do not increase with age, and this we know is not so. Even under cancellable forms of insurance there has been observed an increasing rate of disability beyond the age of 50. This increase is likely to be much more marked upon the business that is not selected upon each annual renewal. The company, therefore, that is charging the same rate of premium, irrespective of age, and is working upon the basis that what is left over after payment of the year's incurred claims and expenses, is profit, is liable to be embarrassed in years to come by reason of a premium wholly inadequate to meet the increasing costs in later years due to advance in age.

The Manchester Unity tables show the amount of sickness per member according to age attained. The sickness is divided into first three months' sickness, second three months' sickness, second six months' sickness, second year's sickness and after two years' sickness. But the sickness tables are not arranged according to the age at which the sickness starts. In Appendix VI of the "Report for 1912 and 1913 on the Administration of the National Insurance Act of Great Britain" is a memorandum on rates of sickness of the Manchester Unity, showing how actuarial formulas were applied to the experience of the whole Society to rearrange the tables so as to show the amount of sickness per member in the first week of sickness, the second week of sickness, and so on up to the fifty-second week of sickness, and how the amount of after two years' sickness per member was split up into second year's sickness, third year's sickness, fourth year's sickness, and so on.

The same formulas have been here applied in rearranging the experience of the A. H. J. group. A brief account of the methods employed may be useful to those who have not at hand the "Report for 1912 and 1913 on the Administration of the National Insurance Act."

Let s_t = sickness expressed in years per person per annum counting sickness only beyond duration t ,

Then $s_t - s_{t,h}$ = sickness expressed in years per person per annum counting sickness only between duration t and $t + h$.

Considering l_x persons,

(number of cases of sickness between duration t and $t + h$ in one year) multiplied by (their average duration beyond t)

= total amount of sickness in the year

$$= l_{x+\frac{1}{2}} (s_t - s_{t+h}).$$

Hence

number of cases of sickness of between duration t and $t + h$ in one year.

$$= \frac{l_{x+\frac{1}{2}} (s_t - s_{t+h})}{\text{their average duration beyond } t}$$

$$= (\text{as } h \text{ approaches } 0) - \frac{ds_t}{dt},$$

i.e., the proportion of cases of sickness of duration t

$$= - \frac{ds_t}{dt}$$

$$= - s_t \frac{d \log_e s_t}{dt}$$

$$= \frac{1}{\log_e 10} s_t (\Delta - \frac{1}{2} \Delta^2 + \frac{1}{3} \Delta^3 \dots) \log_{10} s_t.$$

The Manchester Unity Tables give values of s_0, s_1, s_2, s_4 and s_8 , representing sickness per member per annum of full duration, of duration over three months, over six months, over twelve months and over two years, respectively. s_3, s_6, s_9 and s_7 are found by interpolation.

The amount of first year's sickness per member is represented graphically. Along a base line are measured successive lengths representing six weeks, seven weeks and then three of thirteen weeks each. Upon these bases are set up rectangles, the areas of which represent the amount of sickness per member for the first six weeks' sickness, the next seven weeks' sickness, the next thirteen weeks' sickness, and so on.

Recourse was had to the British Friendly Society's experience, 1876 to 1880, in order to ascertain the proportion of the first three months' sickness which fell within the first six weeks. The problem is to replace the area of the rectangles by an area bounded by a continuous curve. The ordinate of the curve at any point will

represent the proportion of cases of sickness of duration represented by the abscissa of the point. The initial ordinate is found in the following way:

Among l_x persons for one year
 total cases of sickness = number sick at beginning of year + new cases of sickness during the year

$$\therefore \frac{\text{total cases of sickness}}{l_{x+\frac{1}{2}}} = \frac{\text{number of persons sick at beginning of year}}{l_{x+\frac{1}{2}}} + \frac{\text{new cases during the year}}{l_{x+\frac{1}{2}}}$$

i.e.,

$$\begin{aligned} &\text{Proportion sick} \\ &= \frac{\text{number of persons sick at beginning of year}}{l_{x+\frac{1}{2}}} \\ &\qquad\qquad\qquad + \text{proportion of new cases} \end{aligned}$$

$$\begin{aligned} \therefore \text{Proportion of new cases} \\ &= \text{Proportion sick} - \frac{\text{number of persons sick at beginning of year}}{l_{x+\frac{1}{2}}} \\ &= \text{Proportion sick} - \frac{\bar{z}_x l_x}{l_{x+\frac{1}{2}}} \end{aligned}$$

where \bar{z}_x is the force of sickness at age x and may be taken equal to the mean of the central sickness rates for ages x and $x-1$. It must be remembered that the rates of sickness in the Manchester Unity are expressed in weeks and the force of sickness in the above formula must be expressed in years—that is, the mean of the central sickness rates for ages x and $x-1$ must be divided by 52.18 to obtain \bar{z}_x .

The ordinates corresponding to s_{18} , s_{26} , s_{30} and s_{32} are found from the formula given above. The ordinate corresponding to s_6 is found by the same formula after having first obtained by interpolation s_{10} , s_{32} and s_{45} .

The curve can then be drawn bounding an area equal to the area of the rectangles and passing through the points fixed by the ordi-

nates that have been determined, and from the curve can then be read off the amount of first week's, second week's, third week's, fourth week's, etc., sickness per member.

It was noticed as to the amount of sickness per member per annum in regard to sickness of duration over three months, over six months, over nine months, over twelve months, over fifteen months, over eighteen months, over twenty-one months and over twenty-four months that the first differences of the logarithms of these quantities approached a constant. This law was assumed to hold good and by it sickness of after two years' duration was split up by years according to time elapsed since sickness started. A test of the accuracy of this method was made from data submitted from some of the Lodges of the Society, and this test indicated that the method gave remarkably good results.

One objection, and a very pertinent one, that has been raised to the use of the Manchester Unity tables is that any premiums calculated therefrom understate the reductions from the premiums for a policy under which indemnity is paid from the first day of sickness to correct for the elimination of payment of indemnity for the first two weeks, the first month or the first thirteen weeks of sickness. This is an important point because these latter forms of policies are the popular ones.

This objection is raised because in the Manchester Unity any case of disability preceded by a former case where there was an interval between the two of less than twelve months was not considered a new case, but a continuation of the old one. For example, if a member was sick for three months, recovered and was well for nine months, and then sick again for three months, the case was considered as one sickness for six months, three months of which occurred in the first three months of sickness and three months in the second year of sickness. It is to be observed that the total amount of sickness was not overstated, but naturally the sickness in the first three months was considerably understated, while the amount of sickness of long duration was correspondingly overstated. Mr. Alfred W. Watson, in his paper read before the Institute of Actuaries, appearing in Volume 35 of the *Journal* of the Institute, gives a table showing approximately the correction that would have to be applied when each attack of sickness, without regard to preceding ones, is considered a new case.

This correction has been applied to the A. H. J. sickness rates, and the results shown below for decennial attained ages.

TABLE I.

MANCHESTER UNITY SICKNESS EXPERIENCE—A. H. J. GROUP (MODIFIED SO AS TO COUNT EACH SUCCESSIVE CASE OF SICKNESS AS A NEW CASE).
Amount of Sickness in Weeks per Member per Annum.

Age.	First 3 Months.	Second 3 Months.	Second 6 Months.	Second 12 Months.	After 2 Years.	All Periods.
20..	.731	.040	.027	.013	.004	.815
30..	.713	.063	.043	.039	.060	.918
40..	.856	.110	.076	.067	.204	1.313
50..	1.146	.206	.152	.144	.529	2.177
60..	1.722	.438	.450	.513	1.698	4.821
65..	2.165	.720	.824	.983	3.491	8.183
70..	2.644	.994	1.380	1.808	7.087	13.913
80..	2.292	1.238	1.932	3.219	21.096	29.777
90..	1.831	.910	1.544	2.522	30.857	37.664

The first year's sickness in the foregoing table for ages 20, 30, 40, 50, 60 and 65 has been divided into sickness occurring in the first week, the first two weeks, the first three weeks and so on for the whole of the year by the method described, and the results are shown in Table II.

In determining the initial ordinate of the curve bounding the area representing the first year's sickness, a slight modification of the method above described had to be made because a case of sickness in the Manchester Unity was not counted as a new case if it had been preceded by a former sickness and the interval had been less than twelve months. Accordingly, the initial ordinate was determined from the graduated rates of sickness appearing in the Manchester Unity tables instead of from the rates of sickness appearing in Table I. It was then increased in the same ratio that the amount of sickness in the first three months, appearing in Table I, bears to the amount of sickness for the first three months appearing in the Manchester Unity tables.

The after two years' sickness appearing in Table I was split up into second, third, fourth, fifth year sickness and so on for the attained ages shown in the table and values for intermediate ages found by interpolation. The table was then rearranged showing the amount of sickness per member for age at which sickness commenced. The results are shown in Table III.

A modification was introduced for the older ages at entry. For

ages at entry 50, 60 and 65 for rates of sickness after the second year values were deduced from Hunter's Total and Permanent Disability table.

The following formula was used:

Between age $x - \frac{1}{2}$ and $x + \frac{1}{2}$ there occur $r_{x-\frac{1}{2}} l_{x-\frac{1}{2}}^{aa}$ cases of disability. Among these cases there will be during the year of age $x + n$ to $x + n + 1$

$$r_{x-\frac{1}{2}} l_{x-\frac{1}{2}}^{aa} \frac{l_{x+n+\frac{1}{2}}^i}{l_{x+\frac{1}{2}}^i} \cdot 52$$

weeks of disability.

The amount of $(n + 1)$ th year of sickness per member of age $x + n$ is therefore

$$\frac{r_{x-\frac{1}{2}} l_{x-\frac{1}{2}}^{aa}}{l_{x+n+\frac{1}{2}}} \cdot \frac{l_{x+n+\frac{1}{2}}^i}{l_{x+\frac{1}{2}}^i} \cdot 52.$$

Possibly the high rates of sickness shown at the older ages by the Manchester Unity are due to the inclusion, to some extent, of what would be virtually superannuation benefits. Payment of such benefits to any appreciable extent would make the Manchester Unity tables unsuitable for our purposes at the older ages.

Table III has been used for calculating net level premiums and reserves for a disability policy renewable up to age 60, under which the benefit is payable as long as disability lasts, provided it commences before age 60. For mortality the experience of the Manchester Unity Whole Society has been used and interest at $3\frac{1}{2}$ per cent has been assumed.

If $s'_{(x)} n/1$ = rate of $(n + 1)$ th year of sickness among persons aged $x + n$ to $x + n + 1$, then the One-Year-Term premium for a benefit of \$1 a week, payable as long as disability lasts, is

$$\frac{s_{(x)}^{0/1} l_{x+\frac{1}{2}} v^{\frac{1}{2}} + s_{(x)}^{1/1} l_{x+\frac{3}{2}} v^{3/2} + s_{(x)}^{2/1} l_{x+\frac{5}{2}} v^{5/2} + \dots}{l_x}$$

I have denoted the One-Year-Term premium for a unit of payment of \$10 a month by $\pi_x^{0/all}$ where 0 shows the benefit is payable from the first day of sickness and "all" that there is no limit to the period of payment. $\pi_x^{13/2/all}$ will represent the One-Year-Term premium for a similar benefit except that here there will be no payment for the first thirteen weeks of disability.

One-Year-Term premiums have been calculated from Table III by the above formula for ages 20, 30, 40, 50, 60 and 65 for policies

with waiting periods of no, two, four and thirteen weeks, and premiums for intermediate ages found by interpolation. These are shown in Table IV. They are shown for a benefit of \$10 a month.

Commutation columns were then constructed. For a policy with no waiting period,

$$H_x^{0/all} = \pi_x^{0/all} D_x,$$

$$K_x^{0/all} = \sum_x^{64} H_x^{0/all}.$$

The net level premium at age x for \$10 a month indemnity upon such a policy renewable up to age 60 will be

$$\frac{K_x^{0/all} - K_{60}^{0/all}}{N_{x-1} - N_{59}}.$$
 *

In Table V are given columns for K for waiting periods of no, two, four and thirteen weeks. In Table VI appear net level premiums for policies renewable up to age 60, and in Table VII the terminal reserves for these policies.

The above formula for a One-Year-Term disability premium was suggested by Mr. J. D. Craig in his paper on Health Insurance appearing in Volume 15 of the Transactions of the Actuarial Society. If in compiling the Manchester Unity all sicknesses starting between attained age $x - \frac{1}{2}$ and $x + \frac{1}{2}$ are assumed to start at age x , the formula would be exact, but in the light of the actual distribution of sickness throughout the year it involves a theoretical error, but one of negligible results.

It should be stated that the net premiums and reserves proposed are intended for male lives. A higher rate of morbidity may be expected among women than among men.

CLAIM RESERVES.

The subject of claim reserve for a policy when the insured is disabled assumes much more importance when the indemnity is payable throughout disability without limit than when payments are limited to fifty-two weeks. Moreover, it is evident that a claim under a policy with a thirteen weeks' waiting period will be much heavier on the average than a claim under a policy with a shorter waiting period. What reserve should be made on approval of a

* In the Manchester Unity Tables N is given in the English form so that $N_x = D_{x+1} + D_{x+2} + D_{x+3} + \dots$

claim under a policy with a waiting period of thirteen weeks? Should claim reserves be set aside for long-existing disabilities, having regard to the claim adjuster's estimate of the probable future duration of the sickness in each case? Recoveries and deaths are liable not to occur quite so soon as the adjuster may anticipate. Besides, cases that have run but a short time must be valued by some average method, and in cases of permanent and total disability interest as well as the probable duration of disability is a factor in the determination of the liability. It has been suggested that tables of claim reserves should be prepared for cases of total and permanent disability for various types of disability. But this is contrary to the practice in regard to disability benefits in Life insurance policies and is probably impracticable. After all, given a good volume of cases, the use of an average table of claim reserves according to age of claimant and duration of claim will produce the same result as the aggregate of the individual estimates of the claim adjuster—that is, it will do so if the claim adjuster correctly classifies each claim. But no adjuster can correctly classify all his claims, and the use of an average table of claim reserves will save much labor.

In Table VIII is given an analysis by duration of given number of claims occurring at ages 20, 30, 40, 50 and 60. The table also shows the number of persons among whom these claims will occur during the year. This table is deduced from the rates of disability and mortality upon which the foregoing premiums are based.

The number of cases of sickness starting at age x of duration t (where t is not more than a year) can be obtained from the proportion sick multiplied by the number living—that is, by $l_{x+1/2}$ in cases of sickness lasting two, three, four years and so on, the amount of sickness in years per annum in each year can be obtained by multiplying the rate of sickness for the second, third, fourth year, etc., by $l_{x+3/2}$, $l_{x+5/2}$, $l_{x+7/2}$. . . respectively, and dividing by fifty-two. Representing these amounts of sickness graphically, the number of cases at the end of each year can be obtained. In fact, they can be obtained by inspection except for the first year or two.

From Table VIII a table of claim reserves has been calculated, and appears in Table IX. The reserves have been slightly adjusted so as to merge them into an ultimate table for disabilities existing more than seven years. After the age of 35 this ultimate table

departs but little from Hunter's table of annuities for totally and permanently disabled lives and is identical with it beyond age 53.

CONCLUSION.

It is not suggested that sickness rates in this country are likely to follow very closely the Manchester Unity. Opinions have been expressed by some experienced Accident underwriters that the incidence of sickness will be more favorable in America than in the Manchester Unity experience, while others doubt whether the Manchester Unity makes sufficient provision for the moral hazard undoubtedly existing under disability policies issued for substantial amounts. They fear, after policies have been in force some years and after the most active period of business life has passed, long-term disability claims where the insured is impaired in health and claims to be totally disabled.

A start, however, must be made, and it seems to the writer that the Manchester Unity is as reasonable a table as any available.

There is one point to which attention should be drawn, and that is that the Manchester Unity tables of sickness are aggregate tables, and even if they do fairly well represent the sickness rates likely to be experienced in this country, gross premiums based upon the net premium that I have deduced will be likely to be somewhat too high at the older ages.

I have attempted some trial calculations to correct this by assuming that during the first year after medical examination the experience under non-cancellable disability policies would closely follow the experience under cancellable forms, and that the experience would gradually merge into the Manchester Unity by the end of five years. This attempt was abandoned, as the result of introducing any such modification would be inappreciable at the younger ages at entry and not more than five percent or six percent at the older ages. The introduction of such refinements when our knowledge is so limited does not seem to be warranted. A correction can just as well be effected, if thought to be necessary, by the exercise of judgment in loading the net premiums.

And, indeed, the object of this paper has been primarily to call attention to the necessity of grading premiums for this class of insurance according to age at entry and of setting aside reserves in addition to the one-half a year's premium (customarily accepted as

a correct reserve for a Health policy) so as to provide for the increasing claims that will surely come after the effects of medical selection have worn off and as the age of the insured advances. In addition, attempt has been made to prepare reasonable tables of net premiums and reserves for guidance until a reliable experience of our own under this form of insurance is available.

Recently an Actuarial Committee was appointed by the Bureau of Personal Accident and Health Underwriters to prepare a report upon the subject of "Net Premiums and Reserves for Non-Cancellable Disability Insurance." The writer, who was a member of the committee, is indebted to its work for help in preparing this paper.

TABLE II.

SICKNESS IN WEEKS PER MEMBER PER ANNUM FOR THE FIRST WEEK.

First Two Weeks, First Three Weeks of Sickness and so on up to the First Fifty-Two Weeks of Sickness.

Weeks.	Age 20.	Age 30.	Age 40.	Age 50.	Age 60.	Age 65.
1.....	.230	.208	.221	.245	.309	.349
2.....	.407	.377	.413	.460	.597	.672
3.....	.494	.467	.533	.633	.848	.951
4.....	.550	.520	.594	.734	1.002	1.161
5.....	.588	.558	.639	.808	1.113	1.317
6.....	.617	.587	.678	.868	1.210	1.449
7.....	.644	.614	.714	.921	1.302	1.573
8.....	.667	.639	.747	.970	1.390	1.693
9.....	.687	.661	.776	1.014	1.473	1.806
10.....	.703	.680	.801	1.053	1.548	1.911
11.....	.716	.694	.823	1.088	1.614	2.006
12.....	.725	.705	.841	1.119	1.672	2.090
13.....	.731	.713	.856	1.146	1.722	2.165
14.....	.736	.720	.869	1.170	1.767	2.236
15.....	.740	.727	.881	1.192	1.809	2.304
16.....	.744	.734	.893	1.212	1.849	2.369
17.....	.748	.740	.904	1.231	1.887	2.431
18.....	.752	.746	.914	1.248	1.924	2.490
19.....	.755	.751	.923	1.265	1.959	2.547
20.....	.758	.756	.931	1.281	1.992	2.602
21.....	.761	.760	.938	1.296	2.024	2.655
22.....	.763	.764	.945	1.309	2.054	2.705
23.....	.765	.768	.951	1.321	2.083	2.753
24.....	.767	.771	.957	1.332	2.110	2.799
25.....	.769	.774	.962	1.342	2.136	2.843
26.....	.771	.776	.966	1.352	2.160	2.885
27.....	.773	.778	.970	1.361	2.184	2.926
28.....	.775	.780	.974	1.369	2.207	2.965
29.....	.777	.782	.978	1.377	2.229	3.003
30.....	.779	.784	.982	1.385	2.250	3.041
31.....	.780	.786	.986	1.392	2.270	3.078
32.....	.781	.788	.990	1.399	2.290	3.114
33.....	.782	.790	.994	1.406	2.309	3.150
34.....	.783	.792	.998	1.413	2.328	3.185
35.....	.784	.794	1.001	1.420	2.347	3.219
36.....	.785	.796	1.004	1.426	2.365	3.252
37.....	.786	.798	1.007	1.432	2.383	3.284
38.....	.787	.800	1.010	1.438	2.400	3.316
39.....	.788	.802	1.013	1.444	2.417	3.348
40.....	.789	.804	1.016	1.450	2.433	3.378
41.....	.790	.806	1.019	1.456	2.449	3.407
42.....	.791	.808	1.022	1.461	2.465	3.436
43.....	.792	.810	1.024	1.466	2.480	3.465
44.....	.793	.811	1.026	1.471	2.495	3.493
45.....	.794	.812	1.028	1.476	2.510	3.521
46.....	.795	.813	1.030	1.480	2.525	3.549
47.....	.796	.814	1.032	1.484	2.540	3.576
48.....	.796	.815	1.034	1.488	2.555	3.603
49.....	.797	.816	1.036	1.492	2.569	3.630
50.....	.797	.817	1.038	1.496	2.583	3.657
51.....	.798	.818	1.040	1.500	2.597	3.683
52.....	.798	.819	1.042	1.504	2.610	3.709

TABLE III.
 RATES OF SICKNESS IN WEEKS PER ANNUM.
Age at Which Sickness Commences.

Year.	20	30	40	50	60	65
1.....	.798	.819	1.042	1.504	2.610	3.709
2.....	.019	.043	.071	.161	.593	1.107
3.....	.008	.024	.044	.071	.218	.520
4.....	.005	.018	.038	.066	.202	.480
5.....	.003	.014	.033	.061	.187	.450
6.....	.002	.012	.030	.056	.173	.430
7.....	.001	.010	.028	.051	.160	.410
8.....	.001	.009	.025	.047	.148	.390
9.....	.001	.009	.024	.043	.138	.380
10.....	.001	.008	.022	.039	.131	.370
11.....	.001	.007	.020	.036	.126	.360
12.....	.001	.006	.017	.032	.122	.360
13.....	.001	.005	.015	.030	.118	.360
14.....	.001	.005	.013	.028	.114	.360
15.....	.001	.005	.011	.025	.110	.360
16.....	.001	.004	.009	.024	.110	.360
17.....	.001	.004	.009	.022	.110	.360
18.....	.001	.004	.008	.020	.110	.360
19.....	.001	.004	.007	.019	.110	.360
20.....	.001	.003	.007	.018	.110	.360
21.....	.001	.003	.007	.017	.110	.360
22.....	.001	.003	.007	.016	.110	.360
23.....	.001	.002	.006	.015	.110	.320
24.....	.001	.002	.006	.015	.110	.280
25.....	.001	.001	.006	.014	.110	.240
26.....	.001	.001	.006	.014	.110	.200
27.....	.001	.001	.006	.014	.100	.160
28.....	.001	.001	.006	.014	.090	.120
29.....	.001	.001	.006	.014	.080	.080
30.....	.001	.001	.006	.014	.070	.040
31.....	.001	.001	.006	.014	.060	
32.....	.001	.001	.006	.014	.050	
33.....	.001	.001	.006	.014	.040	
34.....	.001	.001	.006	.014	.030	
35.....	.001	.001	.006	.014	.020	
36.....	.001	.001	.006	.014		
37.....	.001	.001	.006	.014		
38.....	.001	.001	.006	.013		
39.....	.001	.001	.006	.012		
40.....	.001	.001	.006	.010		

TABLE IV.
NON-CANCELLABLE DISABILITY INSURANCE.

One-Year-Term Premiums.

Benefit \$10 a Month.

Mortality: M. U. Whole Society—Sickness: M. U.—A. H. J. Group
Modified. Interest $3\frac{1}{2}$ Percent.

Age.	$\pi_{x^0}/all.$	$\pi_{x^{1/52}}/all.$	$\pi_{x^{1/52}}/all.$	$\pi_{x^{15/52}}/all.$
20.....	1.91	.99	.67	.26
21.....	1.92	1.00	.69	.26
22.....	1.94	1.03	.71	.28
23.....	1.95	1.06	.75	.31
24.....	1.97	1.09	.78	.36
25.....	1.99	1.13	.82	.40
26.....	2.02	1.17	.86	.44
27.....	2.06	1.21	.90	.47
28.....	2.10	1.26	.94	.51
29.....	2.15	1.30	.99	.55
30.....	2.21	1.36	1.04	.60
31.....	2.27	1.42	1.10	.65
32.....	2.34	1.48	1.16	.70
33.....	2.42	1.55	1.22	.75
34.....	2.50	1.63	1.29	.81
35.....	2.59	1.71	1.36	.87
36.....	2.69	1.80	1.44	.93
37.....	2.79	1.89	1.52	1.00
38.....	2.91	2.00	1.61	1.07
39.....	3.02	2.10	1.70	1.14
40.....	3.13	2.20	1.79	1.21
41.....	3.23	2.29	1.87	1.26
42.....	3.32	2.38	1.94	1.31
43.....	3.42	2.47	2.01	1.35
44.....	3.54	2.58	2.10	1.41
45.....	3.68	2.71	2.21	1.49
46.....	3.85	2.87	2.35	1.60
47.....	4.05	3.06	2.51	1.72
48.....	4.26	3.26	2.69	1.86
49.....	4.50	3.49	2.89	2.02
50.....	4.76	3.73	3.11	2.19
51.....	5.02	3.97	3.32	2.36
52.....	5.29	4.21	3.54	2.52
53.....	5.58	4.47	3.78	2.71
54.....	5.94	4.80	4.08	2.95
55.....	6.40	5.23	4.48	3.29
56.....	6.93	5.73	4.95	3.69
57.....	7.52	6.29	5.48	4.15
58.....	8.19	6.93	6.09	4.67
59.....	8.98	7.68	6.82	5.31
60.....	9.92	8.59	7.69	6.09
61.....	11.00	9.65	8.70	7.00
62.....	12.22	10.85	9.84	8.04
63.....	13.57	12.17	11.12	9.20
64.....	15.05	13.61	12.54	10.48
65.....				

TABLE V.
COMMUTATION COLUMNS.

Age.	$K'_{x,0}/all.$	$K'_{x,1/52}/all.$	$K'_{x,2/52}/all.$	$K'_{x,13/52}/all.$
20.....	3,401,038	2,419,859	1,979,181	1,332,613
21.....	3,305,981	2,370,589	1,945,836	1,319,673
22.....	3,213,948	2,322,655	1,912,762	1,307,210
23.....	3,124,409	2,275,116	1,879,993	1,294,287
24.....	3,037,772	2,228,021	1,846,671	1,280,514
25.....	2,953,537	2,181,414	1,813,319	1,265,121
26.....	2,871,660	2,134,921	1,779,581	1,248,663
27.....	2,791,702	2,088,609	1,745,540	1,231,246
28.....	2,713,267	2,042,538	1,711,272	1,213,351
29.....	2,636,367	1,996,398	1,676,850	1,194,675
30.....	2,560,657	1,950,620	1,641,988	1,175,307
31.....	2,485,833	1,904,574	1,606,777	1,154,993
32.....	2,411,954	1,858,359	1,570,976	1,133,838
33.....	2,338,759	1,812,065	1,534,691	1,111,942
34.....	2,266,021	1,765,477	1,498,021	1,089,399
35.....	2,193,836	1,718,412	1,460,774	1,066,011
36.....	2,122,018	1,670,995	1,423,063	1,041,887
37.....	2,050,402	1,623,074	1,384,726	1,017,128
38.....	1,979,112	1,574,781	1,345,887	991,576
39.....	1,907,773	1,525,751	1,306,418	965,345
40.....	1,836,773	1,476,380	1,266,451	938,544
41.....	1,766,235	1,426,801	1,226,112	911,275
42.....	1,696,493	1,377,355	1,185,735	884,069
43.....	1,627,842	1,328,141	1,145,620	856,981
44.....	1,560,153	1,279,255	1,105,838	830,262
45.....	1,493,123	1,230,403	1,066,074	803,564
46.....	1,426,489	1,181,333	1,026,058	776,585
47.....	1,359,861	1,131,665	985,389	748,895
48.....	1,292,910	1,081,080	943,896	720,462
49.....	1,225,679	1,029,631	901,442	691,107
50.....	1,157,931	977,089	857,933	660,696
51.....	1,089,630	923,567	813,308	629,272
52.....	1,021,047	869,329	767,950	597,030
53.....	952,314	814,628	721,955	564,288
54.....	883,457	759,468	675,310	530,847
55.....	813,929	703,284	627,554	496,317
56.....	742,972	645,299	577,854	459,841
57.....	670,304	585,214	525,978	421,148
58.....	595,830	522,921	471,707	380,048
59.....	519,353	458,209	414,839	336,440
60.....	440,433	390,714	354,902	289,774
61.....	358,556	319,815	291,431	239,509
62.....	273,501	245,198	224,160	185,383
63.....	185,231	166,824	153,082	127,307
64.....	93,950	84,960	78,281	65,421
65.....				

TABLE VI.

NON-CANCELLABLE DISABILITY INSURANCE.

Level Annual Premiums for Policy Renewable up to Age 60. Benefit \$10
a Month.

Mortality: M. U. Whole Society—Sickness: M. U.—A. H. J. Group
Modified, Interest $3\frac{1}{2}$ Percent.
Waiting Period.

Age.	No Weeks.	2 Weeks.	4 Weeks.	13 Weeks.
20.....	2.94	2.01	1.61	1.04
21.....	2.99	2.07	1.66	1.08
22.....	3.05	2.12	1.71	1.12
23.....	3.11	2.18	1.77	1.16
24.....	3.17	2.24	1.82	1.21
25.....	3.24	2.31	1.88	1.26
26.....	3.31	2.37	1.94	1.30
27.....	3.38	2.44	2.00	1.35
28.....	3.46	2.51	2.06	1.41
29.....	3.54	2.59	2.13	1.46
30.....	3.62	2.66	2.20	1.51
31.....	3.71	2.74	2.27	1.57
32.....	3.80	2.83	2.34	1.63
33.....	3.89	2.91	2.42	1.69
34.....	3.99	3.00	2.50	1.75
35.....	4.09	3.10	2.58	1.81
36.....	4.19	3.19	2.66	1.87
37.....	4.30	3.29	2.75	1.94
38.....	4.41	3.39	2.84	2.01
39.....	4.52	3.50	2.93	2.08
40.....	4.64	3.61	3.03	2.16
41.....	4.76	3.72	3.13	2.23
42.....	4.89	3.84	3.23	2.31
43.....	5.03	3.97	3.35	2.40
44.....	5.18	4.11	3.47	2.50
45.....	5.33	4.25	3.60	2.60
46.....	5.50	4.41	3.74	2.71
47.....	5.67	4.57	3.89	2.83
48.....	5.86	4.75	4.05	2.96
49.....	6.05	4.93	4.21	3.09
50.....	6.26	5.11	4.39	3.24
51.....	6.47	5.31	4.57	3.38
52.....	6.70	5.52	4.77	3.55
53.....	6.95	5.76	4.98	3.73
54.....	7.23	6.01	5.23	3.93
55.....	7.53	6.30	5.50	4.16
56.....	7.85	6.61	5.79	4.42
57.....	8.20	6.94	6.10	4.69
58.....	8.57	7.29	6.44	4.98
59.....	8.98	7.68	6.82	5.31

TABLE VII.

TERMINAL RESERVES—DISABILITY INSURANCE.

Benefit \$10 a Month. Policy Renewable up to Age 60. Manchester Unity A. H. J. Group—Modified. Interest $3\frac{1}{2}$ Percent.
Waiting Period 0 Weeks.

Age at Entry.	End of Year.																			
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
20....	1.07	2.17	3.29	4.45	5.63	6.84	8.07	9.30	10.54	11.79	13.02	14.25	15.45	16.62	17.77	18.87	19.92	20.92	21.84	22.70
21....	1.11	2.25	3.42	4.62	5.85	7.09	8.34	9.60	10.86	12.12	13.36	14.58	15.77	16.94	18.06	19.14	20.16	21.11	21.99	22.81
22....	1.15	2.34	3.55	4.80	6.06	7.33	8.61	9.89	11.16	12.42	13.66	14.88	16.07	17.21	18.31	19.35	20.33	21.23	22.08	22.87
23....	1.20	2.43	3.69	4.97	6.26	7.56	8.86	10.15	11.43	12.70	13.94	15.15	16.32	17.44	18.51	19.51	20.44	21.31	22.13	22.90
24....	1.25	2.53	3.82	5.13	6.45	7.77	9.09	10.39	11.68	12.94	14.18	15.37	16.52	17.61	18.64	19.60	20.50	21.35	22.15	22.89
25....	1.30	2.62	3.94	5.28	6.63	7.96	9.29	10.61	11.89	13.15	14.37	15.55	16.67	17.73	18.72	19.65	20.53	21.36	22.14	22.83
26....	1.34	2.69	4.05	5.42	6.78	8.13	9.47	10.78	12.07	13.32	14.52	15.67	16.76	17.78	18.75	19.66	20.53	21.34	22.07	22.70
27....	1.37	2.76	4.15	5.54	6.92	8.28	9.62	10.94	12.21	13.45	14.63	15.75	16.81	17.80	18.75	19.65	20.50	21.27	21.94	22.48
28....	1.41	2.83	4.24	5.65	7.04	8.41	9.75	11.06	12.33	13.54	14.69	15.78	16.82	17.80	18.74	19.63	20.44	21.15	21.73	22.14
29....	1.44	2.88	4.32	5.74	7.14	8.51	9.85	11.15	12.40	13.59	14.71	15.78	16.80	17.78	18.71	19.56	20.32	20.95	21.40	21.68
30....	1.47	2.93	4.38	5.82	7.22	8.60	9.93	11.21	12.44	13.60	14.71	15.77	16.79	17.76	18.65	19.45	20.13	20.63	20.96	21.07
31....	1.50	2.98	4.44	5.88	7.29	8.66	9.98	11.24	12.44	13.59	14.69	15.75	16.77	17.71	18.56	19.28	19.83	20.21	20.38	20.30
32....	1.52	3.01	4.49	5.93	7.34	8.70	10.00	11.24	13.43	13.59	14.68	15.74	16.73	17.62	18.40	19.00	19.44	19.66	19.64	19.36
33....	1.53	3.04	4.52	5.97	7.37	8.71	9.99	11.22	12.41	13.56	14.67	15.71	16.65	17.48	18.14	18.63	18.91	18.95	18.74	18.26
34....	1.55	3.07	4.55	5.99	7.37	8.70	9.98	11.21	12.41	13.56	14.65	15.65	16.53	17.25	17.80	18.14	18.24	18.09	17.68	16.96
35....	1.56	3.08	4.57	5.99	7.36	8.69	9.97	11.21	12.42	13.56	14.62	15.55	16.33	16.94	17.34	17.50	17.43	17.00	16.44	15.40
36....	1.57	3.09	4.56	5.98	7.35	8.68	9.98	11.24	12.43	13.54	14.54	15.37	16.04	16.51	16.74	16.74	16.46	15.89	14.93	13.46
37....	1.57	3.09	4.55	5.97	7.36	8.70	10.02	11.27	12.44	13.49	14.39	15.12	15.66	15.96	16.02	15.83	15.33	14.46	13.06	11.04
38....	1.56	3.08	4.55	5.98	7.39	8.75	10.06	11.29	12.41	13.37	14.17	14.78	15.15	15.29	15.17	14.76	13.96	12.66	10.73	8.08
39....	1.57	3.09	4.58	6.04	7.46	8.83	10.12	11.30	12.33	13.20	13.87	14.32	14.53	14.49	14.16	13.46	12.24	10.41	7.86	4.46
40....	1.58	3.12	4.64	6.12	7.55	8.90	10.15	11.25	12.19	12.93	13.46	13.75	13.79	13.55	12.93	11.81	10.08	7.64	4.34	
41....	1.60	3.18	4.72	6.22	7.64	8.95	10.12	11.13	11.96	12.56	12.93	13.06	12.91	12.38	11.36	9.73	7.40	4.22		
42....	1.64	3.25	4.81	6.30	7.69	8.93	10.02	10.93	11.61	12.08	12.29	12.23	11.81	10.89	9.37	7.15	4.09			
43....	1.68	3.31	4.88	6.34	7.66	8.84	9.83	10.60	11.16	11.47	11.51	11.19	10.38	8.98	6.88	3.95				
44....	1.71	3.35	4.90	6.31	7.57	8.65	9.52	10.18	10.59	10.74	10.53	9.84	8.56	6.60	3.80					
45....	1.73	3.36	4.86	6.22	7.40	8.37	9.13	9.66	9.92	9.83	9.27	8.12	6.29	3.65						

TABLE VII. (Continued).

TERMINAL RESERVES—DISABILITY INSURANCE.

Benefit \$10 a Month. Policy Renewable up to Age 60. Manchester Unity A. H. J. Group—Modified. Interest 3½ Percent.
Waiting Period 0 Weeks.

Age at Entry.	End of Year.																			
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
46....	1.73	3.33	4.78	6.07	7.15	8.02	8.66	9.05	9.09	8.65	7.65	5.97	3.48							
47....	1.70	3.27	4.66	5.86	6.85	7.61	8.13	8.30	8.01	7.15	5.63	3.31								
48....	1.68	3.19	4.50	5.61	6.51	7.16	7.47	7.33	6.63	5.27	3.12									
49....	1.63	3.07	4.32	5.35	6.14	6.60	6.62	6.08	4.89	2.93										
50....	1.57	2.96	4.13	5.07	5.69	5.87	5.50	4.49	2.72											
51....	1.53	2.85	3.95	4.73	5.08	4.89	4.08	2.51												
52....	1.49	2.75	3.71	4.24	4.24	3.63	2.28													
53....	1.44	2.59	3.32	3.54	3.15	2.03														
54....	1.36	2.31	2.76	2.61	1.76															
55....	1.19	1.90	2.03	1.45																
56....	.98	1.39	1.13																	
57....	.72	.78																		
58....	.41																			

TABLE VII. (Continued).

TERMINAL RESERVES—DISABILITY INSURANCE.

Benefit \$10 a Month. Policy Renewable up to Age 60. Manchester Unity A. H. J. Group—Modified. Interest $3\frac{1}{2}$ Percent.
Waiting Period 2 Weeks.

Age at Entry.	End of Year.																			
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
20.....	1.06	2.16	3.26	4.38	5.52	6.65	7.80	8.94	10.08	11.23	12.36	13.49	14.59	15.67	16.72	17.73	18.70	19.62	20.47	21.27
21.....	1.11	2.23	3.36	4.51	5.67	6.82	7.99	9.15	10.31	11.46	12.60	13.73	14.83	15.90	16.93	17.92	18.86	19.74	20.56	21.32
22.....	1.14	2.29	3.45	4.62	5.80	6.98	8.15	9.34	10.51	11.67	12.81	13.94	15.03	16.08	17.09	18.06	18.96	19.81	20.59	21.33
23.....	1.17	2.35	3.54	4.73	5.93	7.12	8.33	9.52	10.70	11.86	13.01	14.12	15.20	16.24	17.23	18.15	19.03	19.84	20.60	21.32
24.....	1.20	2.40	3.61	4.83	6.05	7.27	8.49	9.69	10.87	12.04	13.18	14.28	15.34	16.36	17.31	18.21	19.05	19.85	20.59	21.29
25.....	1.22	2.45	3.69	4.93	6.17	7.41	8.63	9.84	11.03	12.19	13.32	14.41	15.45	16.44	17.36	18.23	19.06	19.83	20.56	21.22
26.....	1.25	2.51	3.77	5.03	6.29	7.54	8.77	9.99	11.18	12.33	13.44	14.52	15.53	16.48	17.38	18.24	19.05	19.81	20.50	21.09
27.....	1.28	2.56	3.85	5.13	6.40	7.66	8.91	10.12	11.30	12.44	13.54	14.58	15.57	16.50	17.39	18.23	19.03	19.75	20.39	20.89
28.....	1.30	2.62	3.92	5.22	6.50	7.77	9.01	10.22	11.40	12.53	13.60	14.62	15.58	16.50	17.38	18.21	18.97	19.65	20.19	20.58
29.....	1.34	2.67	3.99	5.30	6.60	7.87	9.11	10.31	11.47	12.58	13.63	14.63	15.58	16.50	17.37	18.17	18.88	19.47	19.90	20.15
30.....	1.36	2.71	4.05	5.37	6.67	7.94	9.18	10.37	11.51	12.60	13.63	14.62	15.57	16.48	17.32	18.08	18.71	19.18	19.48	19.58
31.....	1.38	2.75	4.11	5.44	6.74	8.00	9.23	10.41	11.53	12.60	13.63	14.62	15.57	16.45	17.25	17.93	18.45	18.80	18.94	18.86
32.....	1.40	2.79	4.15	5.49	6.79	8.05	9.26	10.42	11.53	12.60	13.63	14.62	15.55	16.39	17.11	17.68	18.08	18.27	18.25	17.98
33.....	1.42	2.82	4.19	5.52	6.82	8.07	9.26	10.41	11.53	12.60	13.63	14.60	15.49	16.27	16.88	17.34	17.58	17.61	17.41	16.96
34.....	1.43	2.84	4.21	5.55	6.83	8.07	9.26	10.41	11.53	12.61	13.63	14.56	15.39	16.06	16.56	16.87	16.93	16.81	16.43	15.77
35.....	1.44	2.85	4.23	5.56	6.83	8.07	9.26	10.43	11.55	12.62	13.61	14.48	15.21	15.77	16.13	16.28	16.19	15.88	15.29	14.34
36.....	1.45	2.87	4.23	5.55	6.83	8.07	9.28	10.46	11.58	12.61	13.54	14.32	14.94	15.37	15.57	15.56	15.21	14.79	13.91	12.56
37.....	1.46	2.87	4.23	5.56	6.85	8.10	9.33	10.50	11.59	12.57	13.41	14.09	14.57	14.85	14.90	14.72	14.27	13.47	12.19	10.33
38.....	1.45	2.86	4.23	5.57	6.88	8.16	9.38	10.53	11.57	12.47	13.21	13.76	14.09	14.21	14.10	13.73	13.01	11.82	10.04	7.57
39.....	1.46	2.88	4.27	5.62	6.95	8.23	9.44	10.54	11.50	12.30	12.91	13.32	13.51	13.48	13.18	12.54	11.43	9.74	7.37	4.18
40.....	1.47	2.91	4.32	5.71	7.04	8.31	9.47	10.49	11.36	12.04	12.52	12.78	12.82	12.61	12.05	11.03	9.43	7.16	4.07	
41.....	1.49	2.96	4.40	5.80	7.12	8.35	9.44	10.38	11.13	11.68	12.02	12.14	12.01	11.54	10.61	9.11	6.93	3.96		
42.....	1.53	3.03	4.49	5.88	7.17	8.33	9.34	10.17	10.80	11.22	11.43	11.38	11.01	10.17	8.77	6.70	3.84			
43.....	1.57	3.09	4.55	5.92	7.15	8.24	9.15	9.86	10.37	10.66	10.71	10.43	9.70	8.40	6.45	3.71				
44.....	1.60	3.13	4.57	5.89	7.06	8.05	8.85	9.45	9.84	9.99	9.82	9.19	8.02	6.19	3.57					

ACCIDENT AND HEALTH POLICIES.

TABLE VII. (Continued).

TERMINAL RESERVES—DISABILITY INSURANCE.

Benefit \$10 a Month. Policy Renewable up to Age 60. Manchester Unity A. H. J. Group—Modified. Interest $3\frac{1}{2}$ Percent.
Waiting Period 2 Weeks.

Age at Entry.	End of Year.																		
	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39
20.....	22.01	22.69	23.32	23.90	24.41	24.81	25.08	25.17	25.08	24.77	24.21	23.40	22.33	20.95	19.18	16.88	13.94	10.25	5.67
21.....	22.03	22.69	23.30	23.83	24.26	24.55	24.68	24.62	24.34	23.82	23.05	22.01	20.67	18.94	16.68	13.79	10.14	5.61	
22.....	22.02	22.65	23.21	23.67	24.00	24.16	24.14	23.89	23.41	22.67	21.67	20.38	18.69	16.48	13.63	10.03	5.56		
23.....	21.98	22.57	23.07	23.43	23.62	23.63	23.42	22.98	22.28	21.33	20.07	18.43	16.26	13.46	9.92	5.50			
24.....	21.91	22.44	22.83	23.06	23.11	22.94	22.53	21.88	20.96	19.75	18.15	16.04	13.29	9.80	5.44				
25.....	21.78	22.21	22.47	22.56	22.43	22.06	21.45	20.58	19.42	17.87	15.80	13.11	9.68	5.37					
26.....	21.56	21.87	21.99	21.90	21.58	21.01	20.19	19.07	17.58	15.56	12.92	9.55	5.31						
27.....	21.24	21.40	21.36	21.08	20.56	19.78	18.72	17.27	15.31	12.73	9.42	5.24							
28.....	20.79	20.79	20.55	20.08	19.35	18.34	16.94	15.05	12.53	9.28	5.17								
29.....	20.20	20.01	19.59	18.91	17.96	16.62	14.78	12.32	9.14	5.09									
30.....	19.44	19.07	18.45	17.55	16.27	14.49	12.10	8.99	5.02										
31.....	18.54	17.97	17.13	15.91	14.20	11.87	8.83	4.94											
32.....	17.48	16.70	15.54	13.89	11.64	8.67	4.85												
33.....	16.24	15.16	13.58	11.39	8.50	4.77													
34.....	14.76	13.25	11.14	8.33	4.68														
35.....	12.91	10.88	8.15	4.58															
36.....	10.61	7.96	4.49																
37.....	7.77	4.39																	
38.....	4.29																		

ACCIDENT AND HEALTH POLICIES.

TABLE VII. (Continued).

TERMINAL RESERVES—DISABILITY INSURANCE.

Benefit \$10 a Month. Policy Renewable up to Age 60. Manchester Unity A. H. J. Group—Modified. Interest $3\frac{1}{2}$ Percent.
Waiting Period 4 Weeks.

Age at Entry.	End of Year.																			
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
20	.98	1.97	2.99	4.00	5.03	6.05	7.07	8.09	9.11	10.13	11.13	12.11	13.08	14.02	14.94	15.82	16.66	17.47	18.22	18.91
21	1.01	2.04	3.06	4.10	5.14	6.17	7.21	8.25	9.28	10.30	11.30	12.28	13.25	14.18	15.08	15.95	16.77	17.54	18.26	18.92
22	1.04	2.08	3.14	4.19	5.24	6.29	7.35	8.39	9.43	10.45	11.45	12.43	13.39	14.31	15.19	16.04	16.83	17.57	18.26	18.90
23	1.07	2.12	3.19	4.26	5.33	6.40	7.47	8.52	9.56	10.58	11.58	12.56	13.50	14.41	15.28	16.09	16.86	17.57	18.24	18.87
24	1.08	2.17	3.25	4.34	5.43	6.51	7.59	8.64	9.69	10.71	11.70	12.67	13.60	14.49	15.33	16.12	16.86	17.55	18.21	18.84
25	1.10	2.20	3.31	4.42	5.52	6.61	7.69	8.75	9.80	10.82	11.81	12.76	13.67	14.54	15.35	16.12	16.84	17.53	18.19	18.79
26	1.12	2.25	3.37	4.49	5.61	6.71	7.79	8.86	9.90	10.91	11.89	12.83	13.72	14.56	15.35	16.10	16.82	17.51	18.14	18.70
27	1.14	2.29	3.43	4.57	5.69	6.80	7.89	8.95	9.99	10.99	11.96	12.87	13.74	14.56	15.34	16.09	16.81	17.47	18.06	18.54
28	1.17	2.33	3.49	4.63	5.76	6.88	7.97	9.03	10.06	11.05	11.99	12.89	13.74	14.55	15.33	16.08	16.78	17.40	17.92	18.30
29	1.18	2.37	3.53	4.69	5.83	6.94	8.03	9.09	10.11	11.08	12.01	12.89	13.73	14.54	15.32	16.05	16.71	17.27	17.69	17.95
30	1.21	2.40	3.58	4.74	5.88	7.00	8.08	9.13	10.13	11.09	12.00	12.88	13.72	14.54	15.31	16.00	16.60	17.06	17.36	17.49
31	1.22	2.42	3.61	4.78	5.93	7.04	8.12	9.15	10.14	11.09	11.99	12.87	13.73	14.53	15.27	15.90	16.40	16.75	16.92	16.89
32	1.23	2.45	3.65	4.82	5.96	7.08	8.14	9.16	10.14	11.08	12.00	12.89	13.73	14.51	15.18	15.73	16.12	16.34	16.35	16.17
33	1.25	2.47	3.68	4.85	5.99	7.09	8.15	9.16	10.14	11.09	12.02	12.91	13.72	14.44	15.03	15.47	15.73	15.80	15.66	15.31
34	1.26	2.49	3.70	4.87	6.01	7.10	8.15	9.16	10.15	11.12	12.05	12.91	13.66	14.30	14.79	15.10	15.22	15.14	14.84	14.29
35	1.27	2.51	3.72	4.89	6.01	7.10	8.15	9.19	10.20	11.16	12.06	12.87	13.55	14.09	14.46	14.62	14.60	14.36	13.87	13.06
36	1.27	2.52	3.73	4.89	6.01	7.11	8.18	9.23	10.24	11.19	12.04	12.78	13.36	13.78	14.01	14.03	13.85	13.43	12.68	11.48
37	1.28	2.53	3.73	4.89	6.03	7.14	8.24	9.30	10.29	11.19	11.97	12.61	13.09	13.37	13.46	13.34	12.97	12.29	11.17	9.49
38	1.28	2.53	3.73	4.91	6.07	7.21	8.31	9.36	10.31	11.14	11.84	12.37	12.71	12.85	12.80	12.50	11.89	10.83	9.24	7.00
39	1.28	2.53	3.76	4.96	6.15	7.30	8.40	9.40	10.29	11.04	11.63	12.02	12.23	12.24	12.01	11.47	10.49	8.97	6.82	3.89
40	1.29	2.56	3.81	5.05	6.25	7.40	8.46	9.40	10.21	10.86	11.32	11.59	11.67	11.51	11.04	10.14	8.70	6.63	3.79	
41	1.32	2.62	3.90	5.16	6.36	7.47	8.48	9.34	10.06	10.58	10.92	11.07	10.98	10.59	9.77	8.42	6.43	3.69		
42	1.35	2.69	4.00	5.26	6.43	7.50	8.43	9.21	9.80	10.22	10.44	10.43	10.12	9.38	8.12	6.23	3.59			
43	1.40	2.77	4.09	5.32	6.45	7.46	8.30	8.97	9.46	9.76	9.84	9.61	8.97	7.80	6.01	3.47				
44	1.43	2.82	4.12	5.33	6.40	7.33	8.07	8.65	9.03	9.20	9.06	8.52	7.45	5.77	3.35					

TABLE VII. (Continued).

TERMINAL RESERVES—DISABILITY INSURANCE.

Benefit \$10 a Month. Policy Renewable up to Age 60. Manchester Unity A. H. J. Group—Modified. Interest $3\frac{1}{2}$ Percent.
Waiting Period 4 Weeks.

Age at Entry.	End of Year.																			
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
45.....	1.46	2.84	4.11	5.27	6.28	7.11	7.77	8.25	8.51	8.48	8.03	7.08	5.52	3.22						
46.....	1.46	2.82	4.06	5.15	6.08	6.83	7.41	7.77	7.85	7.52	6.68	5.24	3.08							
47.....	1.45	2.78	3.96	4.98	5.84	6.52	6.99	7.18	6.97	6.26	4.95	2.93								
48.....	1.42	2.71	3.83	4.79	5.58	6.17	6.48	6.39	5.82	4.65	2.77									
49.....	1.39	2.62	3.69	4.60	5.30	5.74	5.79	5.35	4.33	2.61										
50.....	1.34	2.53	3.56	4.39	4.96	5.15	4.86	3.99	2.43											
51.....	1.31	2.47	3.44	4.15	4.48	4.34	3.64	2.25												
52.....	1.29	2.40	3.26	3.75	3.78	3.25	2.05													
53.....	1.27	2.29	2.96	3.17	2.83	1.84														
54.....	1.21	2.07	2.48	2.36	1.59															
55.....	1.07	1.72	1.84	1.32																
56.....	.89	1.27	1.03																	
57.....	.66	.72																		
58.....	.38																			

TABLE VII. (Continued.)

TERMINAL RESERVES—DISABILITY INSURANCE.

Benefit \$10 a Month. Policy Renewable up to Age 60. Manchester Unity A. H. J. Group—Modified. Interest $3\frac{1}{2}$ Percent.
Waiting Period 13 Weeks.

Age at Entry.	End of Year.																			
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
20.....	.80	1.64	2.49	3.34	4.17	5.00	5.81	6.63	7.45	8.25	9.03	9.80	10.55	11.28	11.98	12.65	13.29	13.89	14.44	14.96
21.....	.85	1.71	2.57	3.41	4.25	5.08	5.91	6.74	7.55	8.35	9.13	9.90	10.64	11.36	12.04	12.70	13.31	13.89	14.42	14.91
22.....	.87	1.74	2.60	3.45	4.29	5.14	5.98	6.81	7.62	8.42	9.20	9.96	10.69	11.39	12.07	12.70	13.30	13.85	14.36	14.85
23.....	.89	1.76	2.62	3.48	4.34	5.19	6.03	6.86	7.68	8.47	9.25	10.00	10.72	11.41	12.06	12.68	13.25	13.78	14.29	14.78
24.....	.88	1.76	2.63	3.50	4.37	5.23	6.08	6.91	7.72	8.51	9.28	10.02	10.73	11.40	12.04	12.63	13.18	13.71	14.22	14.72
25.....	.89	1.77	2.66	3.54	4.42	5.28	6.13	6.96	7.77	8.56	9.31	10.05	10.74	11.39	12.00	12.58	13.13	13.66	14.18	14.67
26.....	.90	1.80	2.70	3.59	4.47	5.33	6.18	7.01	7.82	8.59	9.34	10.05	10.73	11.37	11.96	12.54	13.09	13.64	14.15	14.61
27.....	.92	1.83	2.74	3.64	4.52	5.38	6.23	7.05	7.85	8.62	9.35	10.05	10.71	11.33	11.93	12.50	13.07	13.61	14.10	14.50
28.....	.93	1.86	2.77	3.67	4.55	5.42	6.26	7.08	7.87	8.63	9.34	10.02	10.67	11.29	11.89	12.49	13.06	13.57	14.00	14.34
29.....	.94	1.87	2.79	3.69	4.58	5.45	6.28	7.10	7.87	8.61	9.32	9.99	10.63	11.26	11.89	12.48	13.02	13.49	13.85	14.10
30.....	.95	1.89	2.81	3.72	4.60	5.46	6.30	7.10	7.86	8.59	9.28	9.96	10.61	11.26	11.88	12.46	12.95	13.35	13.63	13.77
31.....	.96	1.90	2.83	3.74	4.62	5.48	6.30	7.09	7.84	8.56	9.26	9.94	10.62	11.27	11.88	12.40	12.83	13.14	13.32	13.33
32.....	.96	1.92	2.84	3.75	4.63	5.48	6.29	7.07	7.82	8.54	9.26	9.96	10.65	11.28	11.84	12.30	12.65	12.86	12.91	12.81
33.....	.97	1.93	2.85	3.76	4.63	5.47	6.28	7.05	7.81	8.55	9.29	10.00	10.67	11.25	11.75	12.14	12.38	12.48	12.41	12.19
34.....	.98	1.93	2.86	3.76	4.63	5.46	6.26	7.04	7.82	8.58	9.33	10.03	10.65	11.19	11.61	11.89	12.03	12.00	11.82	11.45
35.....	.98	1.94	2.86	3.76	4.62	5.45	6.26	7.06	7.86	8.64	9.38	10.03	10.61	11.06	11.39	11.56	11.58	11.44	11.12	10.53
36.....	.99	1.94	2.86	3.75	4.61	5.45	6.29	7.12	7.93	8.70	9.40	10.01	10.50	10.87	11.09	11.15	11.06	10.78	10.24	9.33
37.....	.98	1.93	2.85	3.74	4.62	5.49	6.35	7.20	8.01	8.74	9.39	9.93	10.33	10.59	10.70	10.66	10.42	9.94	9.09	7.77
38.....	.98	1.93	2.85	3.76	4.66	5.57	6.45	7.29	8.06	8.75	9.33	9.78	10.09	10.24	10.24	10.06	9.63	8.83	7.57	5.76
39.....	.98	1.94	2.88	3.82	4.75	5.67	6.56	7.37	8.10	8.72	9.21	9.56	9.76	9.82	9.69	9.31	8.57	7.37	5.63	3.23
40.....	.99	1.97	2.94	3.91	4.87	5.79	6.65	7.42	8.09	8.63	9.02	9.27	9.38	9.31	8.99	8.30	7.16	5.48	3.15	
41.....	1.01	2.02	3.04	4.04	5.00	5.90	6.71	7.43	8.01	8.46	8.76	8.92	8.90	8.64	8.02	6.95	5.33	3.08		
42.....	1.05	2.10	3.14	4.15	5.09	5.96	6.72	7.36	7.86	8.22	8.44	8.48	8.28	7.72	6.72	5.18				
43.....	1.10	2.19	3.24	4.23	5.15	5.96	6.66	7.22	7.63	7.91	8.02	7.88	7.40	6.47	5.01	2.91				
44.....	1.14	2.25	3.29	4.26	5.14	5.89	6.51	6.99	7.34	7.51	7.45	7.04	6.20	4.82	2.81					

TABLE VII. (Continued.)

TERMINAL RESERVES—DISABILITY INSURANCE.

Benefit \$10 a Month. Policy Renewable up to Age 60. Manchester Unity A. H. J. Group—Modified. Interest $3\frac{1}{2}$ Percent.
Waiting Period 13 Weeks.

Age at Entry.	End of Year.																		
	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39
20.....	15.43	15.88	16.30	16.71	17.09	17.40	17.63	17.75	17.73	17.57	17.25	16.74	16.07	15.17	14.00	12.42	10.33	7.66	4.27
21.....	15.38	15.82	16.25	16.65	16.98	17.23	17.37	17.39	17.25	16.95	16.47	15.83	14.96	13.82	12.27	10.22	7.58	4.23	
22.....	15.31	15.76	16.18	16.54	16.81	16.98	17.02	16.91	16.64	16.19	15.57	14.74	13.62	12.11	10.10	7.50	4.19		
23.....	15.25	15.69	16.07	16.37	16.56	16.63	16.55	16.31	15.89	15.30	14.50	13.42	11.94	9.97	7.41	4.15			
24.....	15.18	15.59	15.92	16.14	16.23	16.18	15.97	15.58	15.03	14.26	13.22	11.77	9.84	7.32	4.10				
25.....	15.11	15.46	15.70	15.83	15.81	15.62	15.27	14.75	14.01	13.01	11.60	9.71	7.23	4.05					
26.....	14.99	15.26	15.42	15.43	15.27	14.95	14.46	13.76	12.79	11.43	9.57	7.13	4.01						
27.....	14.81	14.99	15.03	14.91	14.62	14.17	13.51	12.57	11.25	9.43	7.04	3.96							
28.....	14.55	14.62	14.53	14.28	13.86	13.24	12.34	11.06	9.29	6.94	3.90								
29.....	14.20	14.15	13.93	13.55	12.96	12.11	10.86	9.14	6.84	3.85									
30.....	13.75	13.56	13.22	12.67	11.86	10.66	8.98	6.73	3.80										
31.....	13.19	12.89	12.38	11.61	10.46	8.83	6.62	3.74											
32.....	12.54	12.08	11.35	10.25	8.66	6.51	3.68												
33.....	11.77	11.09	10.03	8.49	6.40	3.62													
34.....	10.81	9.80	8.32	6.28	3.56														
35.....	9.57	8.14	6.15	3.50															
36.....	7.96	6.03	3.44																
37.....	5.90	3.37																	
38.....	3.30																		

TABLE VIII (Continued).

Age of Insured.		20	30	40	50	60
Number of cases of disability lasting	twenty-three years.....	17	29	68	98	170
" " " " " "	twenty-four years.....	17	22	65	86	140
" " " " " "	twenty-five years.....	16	14	62	76	110
" " " " " "	twenty-six years.....	16	14	59	67	80
" " " " " "	twenty-seven years.....	16	14	56	59	60
" " " " " "	twenty-eight years.....	16	13	53	52	40
" " " " " "	twenty-nine years.....	16	13	50	45	30
" " " " " "	thirty years.....	15	13	47	39	20
" " " " " "	thirty-one years.....	15	12	44	34	10
" " " " " "	thirty-two years.....	15	12	41	28	3
" " " " " "	thirty-three years.....	15	11	37	23	1
" " " " " "	thirty-four years.....	15	11	34	19	
" " " " " "	thirty-five years.....	14	10	31	15	
" " " " " "	thirty-six years.....	14	10	28	11	
" " " " " "	thirty-seven years.....	14	9	24	8	
" " " " " "	thirty-eight years.....	13	9	21	6	
" " " " " "	thirty-nine years.....	13	8	19	4	

TABLE IX.

CLAIM RESERVES.

Benefit \$10.00 a Month. Manchester Unity A. H. J. Group Modified. Interest 3.5 Percent.

Age at which Disability St.	Term Disability Has Run																	8 or More Yrs.	At. A.
	0 Wks.	1 Wk.	2 Wks.	3 Wks.	4 Wks.	5 Wks.	6 Wks.	13 Wks.	26 Wks.	1 Yr.	2 Yrs.	3 Yrs.	4 Yrs.	5 Yrs.	6 Yrs.	7 Yrs.			
20.	7.94	6.58	8.30	11.50	14.80	17.80	19.00	53.80	92.50	210.00	362.00	484.00	647.00	929.00	1104.00	1201.00	1251.00	28	
																	1272.00	29	
																	1281.00	30	
																	1272.00	31	
																	1242.00	32	
25.	8.88	7.73	9.58	14.40	17.80	22.80	25.40	64.90	145.00	277.00	397.00	556.00	731.00	957.00	1150.00	1214.00	1201.00	33	
																	1148.00	34	
																	1099.00	35	
																	1042.00	36	
																	994.00	37	
30.	10.20	9.02	10.60	17.30	23.60	29.20	31.90	74.80	179.00	343.00	513.00	650.00	782.00	888.00	955.00	971.00	959.00	38	
																	929.00	39	
																	904.00	40	
																	883.00	41	
																	867.00	42	
35.	11.90	10.60	11.70	20.10	30.30	35.80	38.10	82.80	199.00	397.00	635.00	731.00	815.00	857.00	883.00	867.00	851.00	43	
																	837.00	44	
																	828.00	45	
																	827.00	46	
																	827.00	47	
40.	13.90	12.60	13.30	22.60	36.00	41.50	43.70	88.40	202.00	427.00	737.00	794.00	829.00	828.00	827.00	827.00	827.00	48	
																	827.00	49	
																	827.00	50	
																	827.00	51	
																	826.00	52	
45.	15.80	15.00	15.70	24.20	36.10	42.40	46.60	88.60	202.00	408.00	751.00	822.00	827.00	827.00	827.00	826.00	823.00	53	
																	816.00	54	
																	805.00	55	
																	796.00	56	
																	779.00	57	

TABLE IX. (Continued).

CLAIM RESERVES.

Age at which Disability St.	Term Disability Has Run																8 or More Yrs.	At. A.	
	0 Wks.	1 Wk.	2 Wks.	3 Wks.	4 Wks.	5 Wks.	6 Wks.	13 Wks.	26 Wks.	1 Yr.	2 Yrs.	3 Yrs.	4 Yrs.	5 Yrs.	6 Yrs.	7 Yrs.			
50.	18.90	18.50	19.30	26.50	37.30	45.40	51.30	89.80	202.00	372.00	726.00	823.00	816.00	805.00	796.00	779.00	772.00	58	
																	765.00	59	
																		759.00	60
																		753.00	61
																		749.00	62
55.	24.00	23.70	24.60	30.70	44.90	54.50	60.80	103.00	202.00	338.00	681.00	772.00	765.00	759.00	753.00	749.00	745.00	63	
																	740.00	64	
																	736.00	65	
																	730.00	66	
																	724.00	67	
60.	31.90	31.20	31.90	37.90	63.20	73.90	78.00	133.00	222.00	325.00	636.00	745.00	740.00	736.00	730.00	724.00	716.00	68	
																	707.00	69	
																	697.00	70	
																	685.00	71	
																	672.00	72	
																	656.00	73	
																	638.00	74	
																	618.00	75	
																	595.00	76	
																	568.00	77	
																	538.00	78	
																506.00	79		
																472.00	80		