VALUATION OF DEATH BENEFITS UNDER U. S. LONGSHOREMEN'S AND HARBOR WORKERS' COMPENSATION ACT AS AMENDED JUNE 24, 1948

BY

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The amendment to the U. S. Longshoremen's & Harbor Workers' Compensation Act effective June 24, 1948 removed the previous maximum limitation of $7500 for total payments in any one death claim. Accordingly, in contrast to the situation before the 1948 amendment when most death claims were valued at the $7500 maximum, individual computations based on age and relationship of dependents will now have to be made for the purpose of determining loss reserves or for filing of loss data with rate-making agencies.

The purpose of this paper is to present a practical method for valuing the loss reserves on the basis of the revised benefit provisions.

The following is an outline of the death benefits provided under the Longshoremen's & Harbor Workers' Compensation Act.

Dependent	*Death Benefits*
Widow (or widower)	35% of wages payable during widowhood with two years' compensation in one sum on remarriage.
Parents or grandparents	25% of wages payable during dependency.
Brothers, sisters, grandchildren	15% of wages payable until age 18.
Children	Where there is no widow, 35% of wages for one child and 15% for each additional child, shared equally, payable until age 18.
	Where there is a widow, 15% of wages for each child, increased when widow dies or remarries to 35% for one child and 15% for each additional child, shared equally, payable until age 18.

Maximum for all dependents combined may not exceed 66⅔% of wages.

For computation of lump sum awards payable to dependents, the Longshoremen's & Harbor Workers' Compensation Act specifies the use of the American Experience Table of Mortality, the remarriage tables of the Dutch Royal Insurance Institution and interest at 4% per annum.

However, for the purpose of estimating loss reserves under the U. S. Longshoremen's & Harbor Workers' Compensation Act other than for use in awards which fix the actual commuted amounts payable to dependents, it would appear practicable to employ the basic annuity values which are already available in connection with the New York Workmen's Compensation Law and some of the tabular values already published in New York Workmen's Compensation Special Bulletins No. 207 and No. 222, if we accept as the basis for valuation the Survivorship Annuitants Table of Mortality instead of the American Experience Table and 3% instead of 4% interest per annum. It should be recognized that the 3% interest rate and the Survivorship Annuitants Table will result in higher values.

If we are willing to accept the basic premise of 3% interest per annum and the use of the Survivorship Annuitants Table of Mortality as the basis for valuation of death benefits under the Longshoremen's & Harbor Workers' Compensation Act, the following is a method of arriving at the necessary formulae and tabular values for the various classes of dependents:

WIDOW (OR WIDOWER)

Death benefits to widow (or widower) are 35% of wages payable until death or remarriage plus two years' compensation in one sum on remarriage. The formula for present value of benefits to widow (or widower) per $100 annual wages is $35\,\bar{a}_{x'} + 70\,\bar{E}_{x'}$ where $\bar{a}_{x'}$ indicates an annuity of 1 per annum payable continuously to widow age x until death or remarriage and $\bar{E}_{x'}$ indicates the present value of 1 payable at moment of remarriage.

Using values of $\bar{a}_{x'}$ and $\bar{E}_{x'}$ based on the Survivorship Annuitants Table of Mortality and the Dutch Royal remarriage table and 3% interest, Table 1 of the Appendix has been constructed showing the present value per $100 annual wages of benefits to widow (or widower) under the Longshoremen's & Harbor Workers' Compensation Act.

PARENTS OR GRANDPARENTS

Death benefits to dependent parents or grandparents are 25% of wages payable during dependency (which for actuarial computation purposes is assumed to be until death). These benefits are the same as benefits to dependent parents or grandparents under the N. Y. Workmen's Compensation Law prior to 7/1/48.

Therefore, the present value of benefits to parents or grandparents under the U. S. Longshoremen's & Harbor Workers' Act may be found directly from Table X published on page 20 of N. Y. Special Bulletin No. 207.

BROTHERS, SISTERS, GRANDCHILDREN

Death benefits to dependent brothers, sisters or grandchildren are 15% of wages payable until age 18. These benefits are the same as benefits to these dependents under the N. Y. Workmen's Compensation Law prior to 7/1/48.

Therefore, the present value of benefits to brothers, sisters, or grandchildren under the U. S. Longshoremen's & Harbor Workers' Act may be

found directly from Table IX published on page 19 of N. Y. Special Bulletin No. 207.

CHILDREN

For valuation of children's benefits, it was necessary to derive a set of formulae to express the present value of benefits in terms of joint-life annuities. The method used is explained fully in the article by Mr. Joseph H. Woodward, "Valuation of the Benefit to Widow & Children, Provided by the N. Y. Workmen's Compensation Law as Amended in 1922" published in T. A. S. A. Vol. XXIV page 414.

As explained in this article it is assumed that the force of mortality with regard to children's lives is constant for all ages 0 to 18. Therefore, the present value of an annuity involving joint-lives of children depends only on the total number of children (independent of their ages) and the number of years until oldest child reaches age 18. The expression ${}_r\bar{a}_{\overline{18-y_n}|}$ represents the present value of an annuity during joint lives of r children payable until oldest child, age y_n reaches age 18. Similarly, the expression, ${}_r\bar{a}_{x:\overline{18-y_n}|}$ represents the present value of an annuity involving joint-lives of r children and the life and probability of remarriage of a widow age x payable until oldest child, age y_n reaches age 18.

Where there is only one child, the benefit under the Longshoremen's & Harbor Workers' Compensation Act is 15% of wages while the widow is living and unmarried and 35% after widow dies or remarries, payable until child reaches age 18. Therefore, the present value of benefits per $100 annual wages is $35\,{}_1\bar{a}_{\overline{18-y_1}|} - 20\,{}_1\bar{a}_{x:\overline{18-y_1}|}$ where x is age of widow and y_1 is age of child.

However, where there is more than one child it is necessary to consider that the total benefits to the widow and all children may not exceed the 66⅔% maximum provided under the Longshoremen's & Harbor Workers' Compensation Act. Where widow's age is x and there are n children age $y_1, y_2, y_3, \cdots y_n$ in ascending order of age, the benefit in respect of child age y_n in addition to benefits payable in respect of the widow and $(n-1)$ youngest children is:

while widow is alive and unmarried

15% while none of $(n-1)$ youngest children is alive and under age 18,

15% while exactly one of $(n-1)$ youngest children is alive and under age 18,

1⅔% while exactly two of $(n-1)$ youngest children are alive and under age 18,

0% while three or more of $(n-1)$ youngest children are alive and under age 18.

after death or remarriage of widow

35% while none of $(n-1)$ youngest children is alive and under age 18,

15% while exactly one of $(n-1)$ youngest children is alive and under age 18,

15% while exactly two of $(n-1)$ youngest children are alive and under age 18,

1⅔% while exactly three of *(n−1)* youngest children are alive and under age 18,

0% while four or more of *(n−1)* youngest children are alive and under age 18.

The benefits described above may be expressed in terms of annuities in the form $\bar{a}_{yn:\overline{18\text{-}y_n|}} \dfrac{[r]}{y_1\, y_2\, y_3 \cdots y_{n-1}}$ which is defined as present value of payments until oldest child y_n reaches age 18 while exactly r out of the remaining *(n−1)* children are living, and also in the form $\bar{a}_{x'yn:\overline{18\text{-}y_n|}} \dfrac{[r]}{y_1\, y_2\, y_3 \cdots y_{n-1}}$ which is the present value of payments until oldest child y_n reaches age 18 while exactly r out of the remaining *(n−1)* children are living and the widow age x is living and unmarried.

Now the present value of the children's benefits may be expressed as follows:

$$15\,\bar{a}_{x'yn:\overline{18\text{-}y_n|}} \frac{[0]}{y_1\, y_2\, y_3 \cdots y_{n-1}} + 15\,\bar{a}_{x'yn:\overline{18\text{-}y_n|}} \frac{[1]}{y_1\, y_2\, y_3 \cdots y_{n-1}}$$

$$+ 1\tfrac{2}{3}\,\bar{a}_{x'yn:\overline{18\text{-}y_n|}} \frac{[2]}{y_1\, y_2\, y_3 \cdots y_{n-1}}$$

$$+ 35\left(\bar{a}_{yn:\overline{18\text{-}y_n|}} \frac{[0]}{y_1\, y_2\, y_3 \cdots y_{n-1}} - \bar{a}_{x'yn:\overline{18\text{-}y_n|}} \frac{(0)}{y_1\, y_2\, y_3 \cdots y_{n-1}}\right)$$

$$+ 15\left(\bar{a}_{yn:\overline{18\text{-}y_n|}} \frac{[1]}{y_1\, y_2\, y_3 \cdots y_{n-1}} - \bar{a}_{x'yn:\overline{18\text{-}y_n|}} \frac{[1]}{y_1\, y_2\, y_3 \cdots y_{n-1}}\right)$$

$$+ 15\left(\bar{a}_{yn:\overline{18\text{-}y_n|}} \frac{[2]}{y_1\, y_2\, y_3 \cdots y_{n-1}} - \bar{a}_{x'yn:\overline{18\text{-}y_n|}} \frac{[2]}{y_1\, y_2\, y_3 \cdots y_{n-1}}\right)$$

$$+ 1\tfrac{2}{3}\left(\bar{a}_{yn:\overline{18\text{-}y_n|}} \frac{[3]}{y_1\, y_2\, y_3 \cdots y_{n-1}} - \bar{a}_{x'yn:\overline{18\text{-}y_n|}} \frac{[3]}{y_1\, y_2\, y_3 \cdots y_{n-1}}\right)$$

$$= 35\,\bar{a}_{yn:\overline{18\text{-}y_n|}} \frac{[0]}{y_1\, y_2\, y_3 \cdots y_{n-1}} + 15\,\bar{a}_{yn:\overline{18\text{-}y_n|}} \frac{[1]}{y_1\, y_2\, y_3 \cdots y_{n-1}}$$

$$+ 15\,\bar{a}_{yn:\overline{18\text{-}y_n|}} \frac{[2]}{y_1\, y_2\, y_3 \cdots y_{n-1}} + 1\tfrac{2}{3}\,\bar{a}_{yn:\overline{18\text{-}y_n|}} \frac{[3]}{y_1\, y_2\, y_3 \cdots y_{n-1}}$$

$$- \ 20\ \bar{a}_{x'yn\,:\,\overline{18\text{-}y_n|}}\ \frac{[0]}{y_1\ y_2\ y_3\ \cdots\ y_{n-1}} \ - \ 13\tfrac{1}{3}\ \bar{a}_{x'yn\,:\,\overline{18\text{-}y_n|}}\ \frac{[2]}{y_1\ y_2\ y_3\ \cdots\ y_{n-1}}$$

$$- \ 1\tfrac{2}{3}\ \bar{a}_{x'yn\,:\,\overline{18\text{-}y_n|}}\ \frac{[3]}{y_1\ y_2\ y_3\ \cdots\ y_{n-1}} \qquad (1)$$

As indicated above, it has been assumed that the force of mortality is constant for all children's ages from 0 to 18. The probability that a child (regardless of age) will live for one year is s (where the force of mortality $\mu = .00522 = -\log_e s$).

Therefore the probability that y_n will live one year, that exactly r out of the remaining $(n-1)$ children will live one year and that the remaining $(n-1-r)$ children will die within one year is

$$_{n-1}C_r\ (s)\ (s)^r\ (1\text{-}s)^{n-1-r} \ = \ _{n-1}C_r\ (s^{r+1})\ (1\text{-}s)^{n-1-r}$$

$$= \ _{n-1}C_r\Big[s^{r+1} \ - \ (_{n-1-r}C_1)\ s^{r+2} \ + \ (_{n-1-r}C_2)\ s^{r+3} \ - \ (_{n-1-r}C_3)\ s^{r+4} \ + \ \text{etc.}\Big]$$

The joint-life annuity $\ _r\bar{a}_{\overline{\ t\ }} = \int_{t=o}^{t=18-y} (vs^r)^t\,dt$

Therefore

$$\bar{a}_{yn\,:\,\overline{18\text{-}y_n|}}\ \frac{[r]}{y_1\ y_2\ y_3\ \cdots\ y_{n-1}} \ = \ _{n-1}C_r\Big[(_{n-1-r}C_0)\ _{r+1}\bar{a}_{\overline{18\text{-}y_n|}} \ -$$

$$(_{n-1-r}C_1)_{r+2}\ \bar{a}_{\overline{18\text{-}y_n|}} \ + \ (_{n-1-r}C_2)\ _{r+3}\bar{a}_{\overline{18\text{-}y_n|}} \ - \ \text{etc.}\Big].$$

$$\bar{a}_{x'yn\,:\,\overline{18\text{-}y_n|}}\ \frac{[r]}{y_1\ y_2\ y_3\ \cdots\ y_{n-1}} \ = \ _{n-1}C_r\Big[(_{n-1-r}C_0)\ _{r+1}\bar{a}_{x'\,:\,\overline{18\text{-}y_n|}} \ -$$

$$(_{n-1-r}C_1)\ _{r+2}\bar{a}_{x'\,:\,\overline{18\text{-}y_n|}} \ + \ (_{n-1-r}C_2)\ _{r+3}\bar{a}_{x'\,:\,\overline{18\text{-}y_n|}} \ - \ \text{etc.}\Big]$$

In terms of joint-life annuities formula (1) becomes:

$$\begin{aligned}
&35\ (_{n-1}C_0)\ (_{n-1}C_0 \ \times \ _1\bar{a}_{\overline{18\text{-}y_n|}} \ - \ _{n-1}C_1 \ \times \ _2\bar{a}_{\overline{18\text{-}y_n|}} \ + \ \text{etc.}) \\
&+ \ 15\ (_{n-1}C_1)\ (_{n-2}C_0 \ \times \ _2\bar{a}_{\overline{18\text{-}y_n|}} \ - \ _{n-2}C_1 \ \times \ _3\bar{a}_{\overline{18\text{-}y_n|}} \ + \ \text{etc.}) \\
&+ \ 15\ (_{n-1}C_2)\ (_{n-3}C_0 \ \times \ _3\bar{a}_{\overline{18\text{-}y_n|}} \ - \ _{n-3}C_1 \ \times \ _4\bar{a}_{\overline{18\text{-}y_n|}} \ + \ \text{etc.}) \\
&+ \ 1\tfrac{2}{3}\ (_{n-1}C_3)\ (_{n-4}C_0 \ \times \ _4\bar{a}_{\overline{18\text{-}y_n|}} \ - \ _{n-4}C_1 \ \times \ _5\bar{a}_{\overline{18\text{-}y_n|}} \ + \ \text{etc.}) \qquad (2) \\
&- \ 20\ (_{n-1}C_0)\ (_{n-1}C_0 \ \times \ _1\bar{a}_{x'\,:\,\overline{18\text{-}y_n|}} \ - \ _{n-1}C_1 \ \times \ _2\bar{a}_{x'\,:\,\overline{18\text{-}y_n|}} \ + \ \text{etc.}) \\
&- \ 13\tfrac{1}{3}\ (_{n-1}C_2)\ (_{n-3}C_0 \ \times \ _3\bar{a}_{x'\,:\,\overline{18\text{-}y_n|}} \ - \ _{n-3}C_1 \ \times \ _4\bar{a}_{x'\,:\,\overline{18\text{-}y_n|}} \ + \ \text{etc.}) \\
&- \ 1\tfrac{2}{3}\ (_{n-1}C_3)\ (_{n-4}C_0 \ \times \ _4\bar{a}_{x'\,:\,\overline{18\text{-}y_n|}} \ - \ _{n-4}C_1 \ \times \ _5\bar{a}_{x'\,:\,\overline{18\text{-}y_n|}} \ + \ \text{etc.})
\end{aligned}$$

Substituting n= 1, 2, 3, 4, 5 respectively in above formula (2), we obtain the present value of benefits to youngest, second youngest, third youngest, fourth youngest and fifth youngest child as follows:

Youngest Child

$$35\ {}_1\bar{a}_{\overline{18\text{-}y_1}|} \ -\ 20\ {}_1\bar{a}_{x'\,:\,\overline{18\text{-}y_1}|} \qquad \ldots\ldots(3)$$

Second Youngest Child

$$35\ ({}_1C_0)\ ({}_1\bar{a}_{\overline{18\text{-}y_2}|} \ -\ {}_2\bar{a}_{\overline{18\text{-}y_2}|}) \ +\ 15\ ({}_1C_1)\ ({}_2\bar{a}_{\overline{18\text{-}y_2}|})$$
$$-\ 20\ ({}_1C_0)\ ({}_1\bar{a}_{x'\,:\,\overline{18\text{-}y_2}|} \ -\ {}_2\bar{a}_{x'\,:\overline{18\text{-}y_2}|})$$
$$=\ 35\ {}_1\bar{a}_{\overline{18\text{-}y_2}|} \ -\ 20\ {}_2\bar{a}_{\overline{18\text{-}y_2}|} \ -\ 20\,{}_1\bar{a}_{x'\,:\,\overline{18\text{-}y_2}|} \ +\ 20\ {}_2\bar{a}_{x'\,:\,\overline{18\text{-}y_2}|} \qquad \ldots\ldots(4)$$

Third Youngest Child

$$35\ ({}_2C_0)\ ({}_1\bar{a}_{\overline{18\text{-}y_3}|} \ -\ 2\ {}_2\bar{a}_{\overline{18\text{-}y_3}|} \ +\ {}_3\bar{a}_{\overline{18\text{-}y_3}|})$$
$$+\ 15\ ({}_2C_1)\ ({}_2\bar{a}_{\overline{18\text{-}y_3}|} \ -\ {}_3\bar{a}_{\overline{18\text{-}y_3}|}) \ +\ 15\ ({}_2C_2)\ ({}_3\bar{a}_{\overline{18\text{-}y_3}|})$$
$$-\ 20\ ({}_2C_0)\ ({}_1\bar{a}_{x'\,:\,\overline{18\text{-}y_3}|} \ -\ 2\ {}_2\bar{a}_{x'\,:\,\overline{18\text{-}y_3}|} \ +\ {}_3\bar{a}_{x'\,:\,\overline{18\text{-}y_3}|})$$
$$-\ 13\tfrac{1}{3}\ ({}_2C_2)\ ({}_3\bar{a}_{x'\,:\,\overline{18\text{-}y_3}|})$$
$$=\ 35\ {}_1\bar{a}_{\overline{18\text{-}y_3}|} \ -\ 40\ {}_2\bar{a}_{\overline{18\ y_3}|} \ +\ 20\ {}_3\bar{a}_{\overline{18\text{-}y_3}|} \ -\ 20\ {}_1\bar{a}_{x'\,:\,\overline{18\text{-}y_3}|}$$
$$+\ 40\ {}_2\bar{a}_{x'\,:\,\overline{18\text{-}y_3}|} \ -\ 33\tfrac{1}{3}\ {}_3\bar{a}_{x'\,:\,\overline{18\text{-}y_3}|} \qquad \ldots\ldots(5)$$

Fourth Youngest Child

$$35\ ({}_3C_0)\ ({}_1\bar{a}_{\overline{18\text{-}y_4}|} \ -\ 3\ {}_2\bar{a}_{\overline{18\text{-}y_4}|} \ +\ 3\ {}_3\bar{a}_{\overline{18\text{-}y_4}|} \ -\ {}_4\bar{a}_{\overline{18\text{-}y_4}|})$$
$$+\ 15\ ({}_3C_1)\ ({}_2\bar{a}_{\overline{18\text{-}y_4}|} \ -\ 2\ {}_3\bar{a}_{\overline{18\text{-}y_4}|} \ +\ {}_4\bar{a}_{\overline{18\text{-}y_4}|})$$
$$+\ 15\ ({}_3C_2)\ ({}_3\bar{a}_{\overline{18\text{-}y_4}|} \ -\ {}_4\bar{a}_{\overline{18\text{-}y_4}|}) \ +\ 1\tfrac{2}{3}\ ({}_3C_3)\ ({}_4\bar{a}_{\overline{18\text{-}y_4}|})$$
$$-\ 20\ ({}_3C_0)\ ({}_1\bar{a}_{x'\,:\,\overline{18\text{-}y_4}|} \ -\ 3\ {}_2\bar{a}_{x'\,:\,\overline{18\text{-}y_4}|} \ +\ 3\ {}_3\bar{a}_{x'\,:\,\overline{18\text{-}y_4}|} \ -\ {}_4\bar{a}_{x'\,:\,\overline{18\text{-}y_4}|})$$
$$-\ 13\tfrac{1}{3}\ ({}_3C_2)\ ({}_3\bar{a}_{x'\,:\,\overline{18\text{-}y_4}|} \ -\ {}_4\bar{a}_{x'\,:\,\overline{18\text{-}y_4}|}) \ -\ 1\tfrac{2}{3}\ ({}_3C_3)\ ({}_4\bar{a}_{x'\,:\,\overline{18\text{-}y_4}|})$$
$$=\ 35\ {}_1\bar{a}_{\overline{18\text{-}y_4}|} \ -\ 60\ {}_2\bar{a}_{\overline{18\text{-}y_4}|} \ +\ 60\ {}_3\bar{a}_{\overline{18\text{-}y_4}|} \ -\ 33\tfrac{1}{3}\ {}_4\bar{a}_{\overline{18\text{-}y_4}|}$$
$$-\ 20\ {}_1\bar{a}_{x'\,:\,\overline{18\text{-}y_4}|} \ +\ 60\ {}_2\bar{a}_{x'\,:\,\overline{18\text{-}y_4}|} \ -\ 100\ {}_3\bar{a}_{x'\,:\,\overline{18\text{-}y_4}|} \ +\ 58\tfrac{1}{3}\ {}_4\bar{a}_{x'\,:\,\overline{18\text{-}y_4}|} \qquad \ldots(6)$$

Fifth Youngest Child

$$35\,({}_4C_0)\,({}_1\bar{a}_{\overline{18\text{-}y5|}} - 4\,{}_2\bar{a}_{\overline{18\text{-}y5|}} + 6\,{}_3\bar{a}_{\overline{18\text{-}y5|}} - 4\,{}_4\bar{a}_{\overline{18\text{-}y5|}} + {}_5\bar{a}_{\overline{18\text{-}y5|}})$$

$$+ 15\,({}_4C_1)\,({}_2\bar{a}_{\overline{18\text{-}y5|}} - 3\,{}_3\bar{a}_{\overline{18\text{-}y5|}} + 3\,{}_4\bar{a}_{\overline{18\text{-}y5|}} - {}_5\bar{a}_{\overline{18\text{-}y5|}})$$

$$+ 15\,({}_4C_2)\,({}_3\bar{a}_{\overline{18\text{-}y5|}} - 2\,{}_4\bar{a}_{\overline{18\text{-}y5|}} + {}_5\bar{a}_{\overline{18\text{-}y5|}})$$

$$+ 1\tfrac{2}{3}\,({}_4C_3)\,({}_4\bar{a}_{\overline{18\text{-}y5|}} - {}_5\bar{a}_{\overline{18\text{-}y5|}})$$

$$- 20\,({}_4C_0)\,({}_1\bar{a}_{x'\,:\,\overline{18\text{-}y5|}} - 4\,{}_2\bar{a}_{x'\,:\,\overline{18\text{-}y5|}} + 6\,{}_3\bar{a}_{x'\,:\,\overline{18\text{-}y5|}} - 4\,{}_4\bar{a}_{x'\,:\,\overline{18\text{-}y5|}} + {}_5\bar{a}_{x'\,:\,\overline{18\text{-}y5|}})$$

$$- 13\tfrac{1}{3}\,({}_4C_2)\,({}_3\bar{a}_{x'\,:\,\overline{18\text{-}y5|}} - 2\,{}_4\bar{a}_{x'\,:\,\overline{18\text{-}y5|}} + {}_5\bar{a}_{x'\,:\,\overline{18\text{-}y5|}})$$

$$- 1\tfrac{1}{3}\,({}_4C_3)\,({}_4\bar{a}_{x'\,:\,\overline{18\text{-}y5|}} - {}_5\bar{a}_{x'\,:\,\overline{18\text{-}y5|}})$$

$$= 35\,{}_1\bar{a}_{\overline{18\text{-}y5|}} - 80\,{}_2\bar{a}_{\overline{18\text{-}y5|}} + 120\,{}_3\bar{a}_{\overline{18\text{-}y5|}} - 133\tfrac{1}{3}\,{}_4\bar{a}_{\overline{18\text{-}y5|}}$$

$$+ 58\tfrac{1}{3}\,{}_5\bar{a}_{\overline{18\text{-}y5|}} - 20\,{}_1\bar{a}_{x'\,:\,\overline{18\text{-}y5|}} + 80\,{}_2\bar{a}_{x'\,:\,\overline{18\text{-}y5|}}$$

$$- 200\,{}_3\bar{a}_{x'\,:\,\overline{18\text{-}y5|}} + 233\tfrac{1}{3}\,{}_4\bar{a}_{x'\,:\,\overline{18\text{-}y5|}} - 93\tfrac{1}{3}\,{}_5\bar{a}_{x'\,:\,\overline{18\text{-}y5|}} \qquad \ldots(7)$$

Tables 2 and 3 of the Appendix have been constructed showing the present value per $100 annual wages of benefits under the Longshoremen's & Harbor Workers' Compensation Act to youngest child and second youngest child respectively where there is a widow, based on formula (3) and (4) above.

Table 4 of the Appendix shows the present value per $100 annual wages of benefits under the Longshoremen's & Harbor Workers' Compensation Act to youngest, second, third, fourth and fifth youngest child where there is no widow. The formulae for these children's benefits are obtained by omitting terms involving widow x from the general children's formulae (3), (4), (5), (6) and (7), as follows:

Youngest Child (No widow)

$$35\,{}_1\bar{a}_{\overline{18\text{-}y1|}}$$

Second Youngest Child (No widow)

$$35\,{}_1\bar{a}_{\overline{18\text{-}y2|}} - 20\,{}_2\bar{a}_{\overline{18\text{-}y2|}}$$

Third Youngest Child (No widow)

$$35\,{}_1\bar{a}_{\overline{18\text{-}y3|}} - 40\,{}_2\bar{a}_{\overline{18\text{-}y3|}} + 20\,{}_3\bar{a}_{\overline{18\text{-}y3|}}$$

Fourth Youngest Child (No widow)

$$35\ {}_1\bar{a}_{\overline{18\text{-}y4}|} - 60\ {}_2\bar{a}_{\overline{18\text{-}y4}|} + 60\ {}_3\bar{a}_{\overline{18\text{-}y4}|} - 33\tfrac{1}{3}\ {}_4\bar{a}_{\overline{18\text{-}y4}|}$$

Fifth Youngest Child (No widow)

$$35\ {}_1\bar{a}_{\overline{18\text{-}y5}|} - 80\ {}_2\bar{a}_{\overline{18\text{-}y5}|} + 120\ {}_3\bar{a}_{\overline{18\text{-}y5}|} - 133\tfrac{1}{3}\ {}_4\bar{a}_{\overline{18\text{-}y5}|} + 58\tfrac{1}{3}\ {}_5\bar{a}_{\overline{18\text{-}y5}|}$$

Regarding the calculation of present values of benefits to the third, fourth and fifth youngest children where there is a widow it would not appear necessary to construct separate tables as has been done for the first and second youngest children. Instead, it would appear expedient to calculate individual values wherever these are necessary by employing, in various combinations, appropriate values which are available in Table 4 of the Appendix, and in Tables IV, V, VI, VII, VIII and IX of N. Y. Special Bulletin No. 222, as follows:

Third Youngest Child

Formula (5) for present value of benefits to third youngest child is

$$35\ {}_1\bar{a}_{\overline{18\text{-}y3}|} - 40\ {}_2\bar{a}_{\overline{18\text{-}y3}|} + 20\ {}_3\bar{a}_{\overline{18\text{-}y3}|} - 20\ {}_1\bar{a}_{x':\overline{18\text{-}y3}|} + 40\ {}_2\bar{a}_{x':\overline{18\text{-}y3}|} - 33\tfrac{1}{3}\ {}_3\bar{a}_{x':\overline{18\text{-}y3}|}$$

Instead of separately calculating each term of this formula, we can break up the formula into the following 6 component parts for each of which tabular values have already been calculated and are available in Table 4 of the Appendix and Tables IV, V, VI and IX of N. Y. Special Bulletin No. 222.

Component Part of Formula (5)	*Tabular Values*
(1) $35\ {}_1\bar{a}_{\overline{18\text{-}y3}|} - 40\ {}_2\bar{a}_{\overline{18\text{-}y3}|} + 20\ {}_3\bar{a}_{\overline{18\text{-}y3}|}$	Table 4 (column 3)
(2) $- 5\tfrac{1}{3}\ (30_1\ \bar{a}_{\overline{18\text{-}y3}|})$	Table IX (column 1) Multiplied by–5⅓
(3) $+ 3\tfrac{1}{3}\ (30\ {}_1\bar{a}_{\overline{18\text{-}y3}|} - 23\tfrac{1}{3}\ {}_3\bar{a}_{\overline{18\text{-}y3}|})$	Table IX (column 2) Multiplied by 3⅓
(4) $+ 10\tfrac{2}{3}\ (30\ {}_1\bar{a}_{\overline{18\text{-}y3}|} - 10\ {}_1\bar{a}_{x':\overline{18\text{-}y3}|}$	Table IV Multiplied by 10⅔
(5) $- 5\tfrac{1}{3}\ (30\ {}_1\bar{a}_{\overline{18\text{-}y3}|} - 10\ {}_1\bar{a}_{x':\overline{18\text{-}y3}|} - 3\tfrac{1}{3}\ {}_2\bar{a}_{x':\overline{18\text{-}y3}|})$	Table V Multiplied by–5⅓
(6) $- 3\tfrac{1}{3}\ (30\ {}_1\bar{a}_{\overline{18\text{-}y3}|} - 23\tfrac{1}{3}\ {}_3\bar{a}_{\overline{18\text{-}y3}|} - 10\ {}_1\bar{a}_{x':\overline{18\text{-}y3}|} - 6\tfrac{2}{3}\ {}_2\bar{a}_{x':\overline{18\text{-}y3}|} + 10\ {}_3\bar{a}_{x':\overline{18\text{-}y3}|})$	Table VI Multiplied by–3⅓

For example, where widow's age x *is 35* and child's age y_3 *is 9*, the present value of child's benefits is calculated as follows:

(1) Table 4 (column 3)			116.03
(2) Table IX (column 1)	multiplied by	$-5\frac{1}{3} = -5\frac{1}{3}$ (231.85)	$= -1236.53$
(3) Table IX (column 2)	" "	$3\frac{1}{3} = 3\frac{1}{3}$ (59.30)	$= +\ 197.66$
(4) Table IV	" "	$10\frac{2}{3} = 10\frac{2}{3}$ (167.62)	$= +1787.95$
(5) Table V	" "	$-5\frac{1}{3} = -5\frac{1}{3}$ (146.65)	$= -\ 782.13$
(6) Table VI	" "	$-3\frac{1}{3} = -3\frac{1}{3}$ (14.76)	$= -\ 49.20$
TOTAL			33.78

The value obtained in this case by substituting the actual joint-life annuity values in formula (5) for third youngest child is 33.76.

Fourth Youngest Child

Formula (6) for the present value of benefits to the fourth youngest child is

$$35\ {}_1\bar{a}_{\overline{18\text{-}y4}|} - 60\ {}_2\bar{a}_{\overline{18\text{-}y4}|} + 60\ {}_3\bar{a}_{\overline{18\text{-}y4}|} - 33\tfrac{1}{3}\ {}_4\bar{a}_{\overline{18\text{-}y4}|}$$
$$- 20\ {}_1\bar{a}_{x':\overline{18\text{-}y4}|} + 60\ {}_2\bar{a}_{x':\overline{18\text{-}y4}|} - 100\ {}_3\bar{a}_{x':\overline{18\text{-}y4}|} + 58\tfrac{1}{3}\ {}_4\bar{a}_{x':\overline{18\text{-}y4}|}$$

This may be broken up into the following 8 component parts:

Component Part of Formula (6)	*Tabular Values*
(1) $35\ {}_1\bar{a}_{\overline{18\text{-}y4}|} - 60\ {}_2\bar{a}_{\overline{18\text{-}y4}|} + 60\ {}_3\bar{a}_{\overline{18\text{-}y4}|} - 33\frac{1}{3}\ {}_4\bar{a}_{\overline{18\text{-}y4}|}$	Table 4 (column 4)
(2) $-\ \frac{1}{3}\ (30\ {}_1\bar{a}_{\overline{18\text{-}y4}|})$	Table IX (column 1) Multiplied by $-\frac{1}{3}$
(3) $-\ 7\frac{1}{2}\ (30\ {}_1\bar{a}_{\overline{18\text{-}y4}|} - 23\frac{1}{3}\ {}_3\bar{a}_{\overline{18\text{-}y4}|})$	Table IX (column 2) Multiplied by $-7\frac{1}{2}$
(4) $+\ 5\frac{5}{6}\ (30\ {}_1\bar{a}_{\overline{18\text{-}y4}|} - 70\ {}_3\bar{a}_{\overline{18\text{-}y4}|} + 40\ {}_4\bar{a}_{\overline{18\text{-}y4}|})$	Table IX (column 3) Multiplied by $5\frac{5}{6}$
(5) $+\ 15\frac{5}{6}\ (30\ {}_1\bar{a}_{\overline{18\text{-}y4}|} - 10\ {}_1\bar{a}_{x':\overline{18\text{-}y4}|})$	Table IV Multiplied by $15\frac{5}{6}$
(6) $-\ 15\frac{1}{2}\ (30\ {}_1\bar{a}_{\overline{18\text{-}y4}|} - 10\ {}_1\bar{a}_{x':\overline{18\text{-}y4}|} - 3\frac{1}{3}\ {}_2\bar{a}_{x':\overline{18\text{-}y4}|})$	Table V Multiplied by $-15\frac{1}{2}$

(7) $+ 7\frac{1}{2}\,(30\ {}_1\bar{a}_{\overline{18\text{-}y_4}|} - 23\frac{1}{3}\ {}_3\bar{a}_{\overline{18\text{-}y_4}|} - 10\ {}_1\bar{a}_{x':\overline{18\text{-}y_4}|} - 6\frac{2}{3}\ {}_2\bar{a}_{x':\overline{18\text{-}y_4}|} + 10\ {}_3\bar{a}_{x':\overline{18\text{-}y_4}|})$ Table VI Multiplied by $7\frac{1}{2}$

(8) $-5\frac{5}{6}\,(30\ {}_1\bar{a}_{\overline{18\text{-}y_4}|} - 70\ {}_3\bar{a}_{\overline{18\text{-}y_4}|} + 40\ {}_4\bar{a}_{\overline{18\text{-}y_4}|} - 10\ {}_1\bar{a}_{x':\overline{18\text{-}y_4}|} - 10\ {}_2\bar{a}_{x':\overline{18\text{-}y_4}|} + 30\ {}_3\bar{a}_{x':\overline{18\text{-}y_4}|} - 10\ {}_4\bar{a}_{x':\overline{18\text{-}y_4}|})$ Table VII Multipied by $-5\frac{5}{6}$

For example, where widow's age x *is 40* and child's age y_4 *is 12*, the present value of child's benefits is calculated as follows:

(1) Table 4 (column 4)				12.20
(2) Table IX (column 1)	multiplied by	$-\frac{1}{3}$ =	$-\frac{1}{3}$ (162.48) =	−54.16
(3) Table IX (column 2)	" "	$-7\frac{1}{2}$ =	$-7\frac{1}{2}$ (39.84) =	−298.80
(4) Table IX (column 3)	" "	$5\frac{5}{6}$ =	$5\frac{5}{6}$ (1.70) =	+ 9.92
(5) Table IV	" "	$15\frac{5}{6}$ =	$15\frac{5}{6}$ (112.89) =	+1787.42
(6) Table V	" "	$-15\frac{1}{2}$ =	$-15\frac{1}{2}$ (96.60) =	−1497.30
(7) Table VI	" "	$7\frac{1}{2}$ =	$7\frac{1}{2}$ (5.84) =	+ 43.80
(8) Table VII	" "	$-5\frac{5}{6}$ =	$-5\frac{5}{6}$ (.26) =	−1.52
TOTAL				1.56

The value obtained in this case by substituting the actual joint-life annuity values in formula (6) for the fourth youngest child is 1.53.

Fifth Youngest Child

Formula (7) for the present value of benefits to the fifth youngest child is

$$35\ {}_1\bar{a}_{\overline{18\text{-}y_5}|} - 80\ {}_2\bar{a}_{\overline{18\text{-}y_5}|} + 120\ {}_3\bar{a}_{\overline{18\text{-}y_5}|} - 133\frac{1}{3}\ {}_4\bar{a}_{\overline{18\text{-}y_5}|} + 58\frac{1}{3}\ {}_5\bar{a}_{\overline{18\text{-}y_5}|} - 20\ {}_1\bar{a}_{x':\overline{18\text{-}y_5}|} + 80\ {}_2\bar{a}_{x':\overline{18\text{-}y_5}|} - 200\ {}_3\bar{a}_{x':\overline{18\text{-}y_5}|} + 233\frac{1}{3}\ {}_4\bar{a}_{x':\overline{18\text{-}y_5}|} - 93\frac{1}{3}\ {}_5\bar{a}_{x':\overline{18\text{-}y_5}|}$$

This may be broken up into the following 10 component parts:

Component Part of Formula (7)	*Tabular Values*
(1) $35\ {}_1\bar{a}_{\overline{18\text{-}y_5}|} - 80\ {}_2\bar{a}_{\overline{18\text{-}y_5}|} + 120\ {}_3\bar{a}_{\overline{18\text{-}y_5}|} - 133\frac{1}{3}\ {}_4\bar{a}_{\overline{18\text{-}y_5}|} + 58\frac{1}{3}\ {}_5\bar{a}_{\overline{18\text{-}y_5}|}$	Table 4 (column 5)

(2) $- 59\frac{1}{3}\ (30\ {}_1\bar{a}_{\overline{18\text{-}y5|}})$ — Table IX (column 1) Multiplied by $-59\frac{1}{3}$

(3) $+ 118\ (30\ {}_1\bar{a}_{\overline{18\text{-}y5|}} - 23\frac{1}{3}\ {}_3\bar{a}_{\overline{18\text{-}y5|}})$ — Table IX (column 2) Multiplied by 118

(4) $- 88\frac{2}{3}\ (30\ {}_1\bar{a}_{\overline{18\text{-}y5|}} - 70\ {}_3\bar{a}_{\overline{18\text{-}y5|}} + 40\ {}_4\bar{a}_{\overline{18\text{-}y5|}})$ — Table IX (column 3) Multiplied by $-88\frac{2}{3}$

(5) $+ 28\ (30\ {}_1\bar{a}_{\overline{18\text{-}y5|}} - 140\ {}_3\bar{a}_{\overline{18\text{-}y5|}} + 160\ {}_4\bar{a}_{\overline{18\text{-}y5|}} - 50\ {}_5\bar{a}_{\overline{18\text{-}y5|}})$ — Table IX (column 4) Multiplied by 28

(6) $+ 1\frac{1}{3}\ (30\ {}_1\bar{a}_{\overline{18\text{-}y5|}} - 10\ {}_1\bar{a}_{x':\overline{18\text{-}y5|}})$ — Table IV Multiplied by $1\frac{1}{3}$

(7) $+ 58\ (30\ {}_1\bar{a}_{\overline{18\text{-}y5|}} - 10\ {}_1\bar{a}_{x':\overline{18\text{-}y5|}} - 3\frac{1}{3}\ {}_2\bar{a}_{x':\overline{18\text{-}y5|}})$ — Table V Multiplied by 58

(8) $- 118\ (30\ {}_1\bar{a}_{\overline{18\text{-}y5|}} - 23\frac{1}{3}\ {}_3\bar{a}_{\overline{18\text{-}y5|}} - 10\ {}_1\bar{a}_{x':\overline{18\text{-}y5|}} - 6\frac{2}{3}\ {}_2\bar{a}_{x':\overline{18\text{-}y5|}} + 10\ {}_3\bar{a}_{x':\overline{18\text{-}y5|}})$ — Table VI Multiplied by -118

(9) $+ 88\frac{2}{3}\ (30\ {}_1\bar{a}_{\overline{18\text{-}y5|}} - 70\ {}_3\bar{a}_{\overline{18\text{-}y5|}} + 40\ {}_4\bar{a}_{\overline{18\text{-}y5|}} - 10\ {}_1\bar{a}_{x':\overline{18\text{-}y5|}} - 10\ {}_2\bar{a}_{x':\overline{18\text{-}y5|}} + 30\ {}_3\bar{a}_{x':\overline{18\text{-}y5|}} - 10\ {}_4\bar{a}_{x':\overline{18\text{-}y5|}})$ — Table VII Multiplied by $88\frac{2}{3}$

(10) $- 28\ (30\ {}_1\bar{a}_{\overline{18\text{-}y5|}} - 140\ {}_3\bar{a}_{\overline{18\text{-}y5|}} + 160\ {}_4\bar{a}_{\overline{18\text{-}y5|}} - 50\ {}_5\bar{a}_{\overline{18\text{-}y5|}} - 10\ {}_1\bar{a}_{x':\overline{18\text{-}y5|}} - 13\frac{1}{3}\ {}_2\bar{a}_{x':\overline{18\text{-}y5|}} + 60\ {}_3\bar{a}_{x':\overline{18\text{-}y5|}} - 40\ {}_4\bar{a}_{x':\overline{18\text{-}y5|}} + 3\frac{1}{3}\ {}_5\bar{a}_{x':\overline{18\text{-}y5|}})$ — Table VIII Multipied by -28

Calculation of individual values for the fifth youngest child may be made by substituting tabular values for each of the above 10 component parts of formula (7).

TABLES FOR VALUATION OF DEATH BENEFITS UNDER U.S. LONGSHOREMEN'S & HARBOR WORKERS COMPENSATION ACT EFFECTIVE 6/24/48*

*Note: These tables are based on
Survivorship Annuitants' Table of Mortality,
Dutch Royal Remarriage Tables,
and 3% interest.

TABLE 1*

WIDOW OR WIDOWER (AT 35¢)

Present Value of Compensation per $100 Annual Wages

Payable Until Death or Remarriage

$$35\,\bar{a}_{x'} + 70\,\bar{E}_{x'}$$

Age	Present Value	Age	Present Value	Age	Present Value
15	316.41	45	504.41	75	231.51
16	323.75	46	589.40	76	219.07
17	331.87	47	583.24	77	206.94
18	340.78	48	576.06	78	195.15
19	350.52	49	567.91	79	183.72
20	361.12	50	558.96	80	172.67
21	372.55	51	549.20	81	162.00
22	384.81	52	538.76	82	151.74
23	397.87	53	527.72	83	141.89
24	411.64	54	516.08	84	132.46
25	426.03	55	504.03	85	123.46
26	440.92	56	491.49	86	114.89
27	456.15	57	478.60	87	106.75
28	471.57	58	465.43	88	99.05
29	486.97	59	451.94	89	91.79
30	502.15	60	438.22	90	84.95
31	516.86	61	424.35	91	78.52
32	530.92	62	410.32	92	72.52
33	544.12	63	396.23	93	66.91
34	556.26	64	382.03	94	61.72
35	567.16	65	367.84	95	56.87
36	576.72	66	353.75	96	52.43
37	584.82	67	339.58	97	48.34
38	591.37	68	325.48	98	44.56
39	596.33	69	311.50	99	41.09
40	599.76	70	297.66	100	37.94
41	601.58	71	283.99	101	35.07
42	601.89	72	270.51	102	32.48
43	600.77	73	257.25	103	30.14
44	598.26	74	244.25		

*Note: Tables 1, 2, 3 and 4 are based on Survivorship Annuitants Table of Mortality, Dutch Royal Remarriage Tables, and 3% interest.

TABLE 2

YOUNGEST CHILD

Present Value Per $100 Annual Wages, Payable Until Age 18

$35, \bar{a}_{\overline{18-y}|} - 20, \bar{a}_{x:\overline{18-y}|}$

Age of Widow (x)	Age of Child (y)																		Age of Widow (x)
	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	
15	346.72	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	15
16	344.84	327.64	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	16
17	342.73	325.66	308.12	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	17
18	340.39	323.47	306.07	288.20	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	18
19	337.80	321.03	303.80	286.10	267.95	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	19
20	334.94	318.35	301.29	283.77	265.82	247.43	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	20
21	331.81	315.40	298.54	281.23	263.47	245.29	226.71	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	21
22	328.39	312.20	295.55	278.45	260.92	242.97	224.62	205.90	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	22
23	324.69	308.72	292.30	275.44	258.15	240.44	222.34	203.87	185.08	.....	.....	.....	.....	.....	.....	.....	.....	.....	23
24	320.71	304.98	288.81	272.20	255.17	237.73	219.89	201.69	183.17	164.37	.....	.....	.....	.....	.....	.....	.....	.....	24
25	316.47	301.00	285.09	268.75	251.99	234.83	217.28	199.37	181.13	162.62	143.88	.....	.....	.....	.....	.....	.....	.....	25
26	311.98	296.78	281.15	265.10	248.63	231.76	214.52	196.91	178.97	160.76	142.32	123.72	.....	.....	.....	.....	.....	.....	26
27	307.28	292.36	277.02	261.27	245.11	228.55	211.62	194.33	176.71	158.81	140.69	122.39	104.02	.....	.....	.....	.....	.....	27
28	302.39	287.76	272.72	257.28	241.44	225.20	208.60	191.64	174.35	156.78	138.98	121.00	102.93	84.87	.....	.....	.....	.....	28
29	297.36	283.03	268.30	253.18	237.66	221.76	205.49	188.87	171.92	154.69	137.22	119.57	101.81	84.04	66.36	.....	.....	.....	29
30	292.24	278.21	263.80	248.99	233.81	218.24	202.31	186.04	169.44	152.56	135.43	118.11	100.67	83.19	65.78	48.58	.....	.....	30
31	287.09	273.36	259.26	244.78	229.92	214.70	199.12	183.19	166.94	150.41	133.62	116.64	99.52	82.34	65.20	48.23	31.58	.....	31
32	281.95	268.53	254.74	240.58	226.05	211.16	195.92	180.34	164.44	148.26	131.81	115.16	98.36	81.48	64.62	47.88	31.41	15.38	32
33	276.88	263.75	250.27	236.42	222.22	207.66	192.76	177.52	161.97	146.13	130.02	113.70	97.21	80.63	64.04	47.53	31.25	15.34	33
34	271.95	259.10	245.91	232.37	218.48	204.25	189.67	174.77	159.55	144.04	128.27	112.27	96.09	79.80	63.47	47.19	31.08	15.30	34
35	267.20	254.62	241.71	228.46	214.88	200.95	186.69	172.11	157.21	142.03	126.57	110.89	95.01	79.00	62.92	46.86	30.93	15.25	35
36	262.67	250.35	237.71	224.73	211.43	197.79	183.84	169.56	154.97	140.09	124.95	109.56	93.97	78.22	62.39	46.54	30.78	15.21	36
37	258.41	246.32	233.92	221.21	208.17	194.81	181.13	167.14	152.84	138.26	123.40	108.29	92.97	77.49	61.88	46.24	30.63	15.18	37
38	254.47	242.59	230.41	217.93	205.13	192.03	178.61	164.89	150.86	136.54	121.95	107.11	92.05	76.80	61.41	45.95	30.50	15.14	38
39	250.86	239.17	227.19	214.91	202.34	189.46	176.28	162.80	149.02	134.95	120.61	106.01	91.18	76.16	60.97	45.69	30.37	15.11	39

TABLE 2

YOUNGEST CHILD

(Concluded)

Age of Widow (x)	Age of Child (y)																		Age of Widow (x)
	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	
40	247.58	236.06	224.25	212.16	199.78	187.11	174.14	160.88	147.33	133.49	119.37	105.00	90.38	75.56	60.56	45.44	30.25	15.08	40
41	244.69	233.29	221.64	209.71	197.50	185.00	172.22	159.15	145.80	132.16	118.25	104.08	89.66	75.02	60.19	45.22	30.15	15.05	41
42	242.16	230.88	219.34	207.54	195.47	183.13	170.51	157.62	144.44	130.98	117.25	103.25	89.01	74.54	59.86	45.02	30.05	15.02	42
43	240.00	228.80	217.35	205.66	193.71	181.49	169.01	156.26	143.23	129.92	116.35	102.51	88.42	74.10	59.56	44.84	29.97	15.00	43
44	238.21	227.06	215.68	204.07	192.20	180.09	167.72	155.08	142.18	129.01	115.57	101.87	87.91	73.71	59.29	44.67	29.89	14.98	44
45	236.81	225.68	214.34	202.77	190.97	178.93	166.64	154.10	141.29	128.23	114.90	101.31	87.47	73.38	59.06	44.54	29.82	14.96	45
46	235.74	224.61	213.28	201.74	189.98	177.98	165.75	153.28	140.55	127.57	114.33	100.84	87.09	73.09	58.86	44.41	29.76	14.95	46
47	235.04	223.86	212.54	200.99	189.24	177.27	165.07	152.64	139.96	127.04	113.87	100.45	86.78	72.86	58.70	44.31	29.71	14.93	47
48	234.69	223.47	212.08	200.51	188.74	176.76	164.57	152.16	139.52	126.63	113.51	100.14	86.52	72.66	58.56	44.22	29.67	14.92	48
49	234.69	223.39	211.93	200.30	188.48	176.48	164.27	151.85	139.22	126.35	113.25	99.91	86.33	72.51	58.45	44.16	29.64	14.91	49
50	235.00	223.59	212.03	200.32	188.44	176.38	164.13	151.69	139.03	126.17	113.07	99.75	86.19	72.40	58.37	44.10	29.61	14.91	50
51	.....	224.12	212.44	200.61	188.64	176.50	164.19	151.69	139.00	126.10	113.00	99.67	86.11	72.33	58.32	44.07	29.59	14.90	51
52	.....	.....	213.11	201.15	189.06	176.81	164.41	151.84	139.09	126.15	113.01	99.66	86.09	72.30	58.29	44.05	29.58	14.90	52
53	.....	.....	.....	201.93	189.69	177.32	164.80	152.14	139.30	126.29	113.10	99.71	86.11	72.31	58.28	44.04	29.58	14.89	53
54	.....	.....	.....	.....	190.57	178.04	165.39	152.60	139.66	126.56	113.29	99.84	86.20	72.36	58.31	44.05	29.58	14.90	54
55	.....	.....	.....	.....	.....	178.93	166.12	153.18	140.12	126.91	113.55	100.02	86.32	72.43	58.35	44.07	29.59	14.90	55
56	.....	.....	.....	.....	.....	.....	167.04	153.94	140.73	127.38	113.91	100.28	86.50	72.55	58.42	44.11	29.60	14.90	56
57	.....	.....	.....	.....	.....	.....	.....	154.84	141.46	127.96	114.35	100.61	86.73	72.71	58.52	44.16	29.63	14.91	57
58	.....	.....	.....	.....	.....	.....	.....	.....	142.31	128.64	114.87	101.00	87.01	72.89	58.63	44.22	29.65	14.91	58
59	.....	.....	.....	.....	.....	.....	.....	.....	.....	129.44	115.50	101.48	87.35	73.13	58.78	44.30	29.68	14.92	59
60	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	116.24	102.04	87.76	73.40	58.95	44.40	29.73	14.93	60
61	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	102.66	88.22	73.72	59.15	44.51	29.78	14.94	61
62	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	88.74	74.09	59.39	44.64	29.83	14.96	62
63	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	74.49	59.65	44.78	29.89	14.97	63
64	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	59.95	44.96	29.98	14.99	64
65	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	45.15	30.06	15.02	65
66	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	30.14	15.03	66

TABLE 3

SECOND YOUNGEST CHILD

Present Value Per $100 Annual Wages, Payable Until Age 18

$$35,\overline{a}_{\overline{18-y_2}|} - 20_{\,2}\overline{a}_{\overline{18-y_2}|} - 20,\overline{a}_{x':\overline{18-y_2}|} + 20_{\,2}\overline{a}_{x':\overline{18-y_2}|}$$

Age of Widow (x)	Age of Child (y)																		Age of Widow (x)
	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	
15	208.27	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	15
16	208.17	199.22	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	16
17	208.06	199.12	189.92	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	17
18	207.94	199.01	189.82	180.36	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	18
19	207.81	198.89	189.72	180.27	170.55	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	19
20	207.66	198.76	189.60	180.17	170.46	160.47	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	20
21	207.50	198.62	189.47	180.05	170.36	160.38	150.11	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	21
22	207.32	198.46	189.33	179.93	170.25	160.29	150.03	139.47	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	22
23	207.13	198.29	189.18	179.80	170.14	160.19	149.95	139.40	128.54	.....	.....	.....	.....	.....	.....	.....	.....	.....	23
24	206.93	198.10	189.02	179.65	170.01	160.08	149.86	139.33	128.48	117.31	.....	.....	.....	.....	.....	.....	.....	.....	24
25	206.71	197.91	188.84	179.50	169.88	159.97	149.76	139.25	128.42	117.26	105.77	.....	.....	.....	.....	.....	.....	.....	25
26	206.48	197.70	188.66	179.34	169.74	159.85	149.66	139.16	128.35	117.21	105.73	93.90	.....	.....	.....	.....	.....	.....	26
27	206.24	197.48	188.46	179.17	169.59	159.72	149.55	139.08	128.28	117.15	105.69	93.87	81.69	.....	.....	.....	.....	.....	27
28	205.99	197.26	188.26	178.99	169.44	159.59	149.44	138.98	128.21	117.10	105.64	93.84	81.67	69.12	.....	.....	.....	.....	28
29	205.73	197.03	188.06	178.81	169.28	159.46	149.33	138.89	128.13	117.04	105.60	93.81	81.65	69.10	56.16	.....	.....	.....	29
30	205.47	196.79	187.85	178.63	169.12	159.32	149.21	138.79	128.05	116.98	105.55	93.77	81.62	69.10	56.15	42.80	.....	.....	30
31	205.20	196.56	187.64	178.44	168.96	159.18	149.10	138.70	127.97	116.91	105.51	93.74	81.60	69.07	56.15	42.79	29.00	.....	31
32	204.94	196.32	187.43	178.26	168.80	159.04	148.98	138.60	127.90	116.85	105.46	93.71	81.58	69.06	56.15	42.79	29.00	14.75	32
33	204.68	196.09	187.22	178.07	168.64	158.90	148.86	138.50	127.82	116.79	105.41	93.67	81.58	69.05	56.13	42.79	29.00	14.75	33
34	204.43	195.86	187.02	177.89	168.48	158.77	148.75	138.41	127.74	116.73	105.37	93.64	81.53	69.03	56.12	42.78	29.00	14.75	34
35	204.19	195.64	186.82	177.72	168.33	158.64	148.64	138.32	127.67	116.68	105.33	93.61	81.51	69.02	56.11	42.78	29.00	14.75	35
36	203.96	195.44	186.64	177.56	168.19	158.52	148.54	138.24	127.60	116.62	105.28	93.58	81.49	69.01	56.11	42.78	29.00	14.75	36
37	203.75	195.24	186.46	177.41	168.05	158.40	148.44	138.15	127.53	116.57	105.25	93.55	81.47	68.99	56.10	42.77	29.00	14.75	37
38	203.55	195.06	186.30	177.26	167.93	158.30	148.35	138.08	127.47	116.52	105.21	93.52	81.45	68.98	56.09	42.77	29.00	14.75	38
39	203.37	194.90	186.16	177.13	167.81	158.20	148.26	138.01	127.42	116.47	105.17	93.50	81.44	68.97	56.09	42.77	28.99	14.75	39

TABLE 3

SECOND YOUNGEST CHILD

(Concluded)

Age of Widow (x)	Age of Child (y)																		Age of Widow (x)
	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	
40	203.21	194.75	186.02	177.01	167.71	158.11	148.19	137.94	127.36	116.44	105.14	93.48	81.42	68.96	56.08	42.77	28.99	14.75	40
41	203.07	194.62	185.91	176.91	167.62	158.02	148.12	137.89	127.32	116.40	105.11	93.46	81.41	68.95	56.08	42.76	28.99	14.75	41
42	202.94	194.51	185.80	176.81	167.54	157.95	148.06	137.83	127.27	116.36	105.09	93.44	81.39	68.94	56.07	42.76	28.99	14.74	42
43	202.84	194.41	185.72	176.74	167.46	157.89	148.00	137.79	127.24	116.33	105.07	93.42	81.38	68.94	56.07	42.76	28.99	14.74	43
44	202.76	194.34	185.64	176.67	167.41	157.84	147.96	137.75	127.20	116.31	105.05	93.41	81.37	68.93	56.06	42.76	28.99	14.74	44
45	202.70	194.28	185.59	176.62	167.36	157.80	147.92	137.72	127.18	116.29	105.03	93.39	81.36	68.93	56.06	42.76	28.99	14.74	45
46	202.66	194.24	185.55	176.58	167.32	157.76	147.89	137.69	127.16	116.27	105.03	93.38	81.36	68.92	56.06	42.75	28.99	14.74	46
47	202.63	194.21	185.52	176.55	167.30	157.74	147.87	137.67	127.14	116.25	105.00	93.37	81.35	68.92	56.06	42.75	28.99	14.74	47
48	202.63	194.20	185.51	176.54	167.28	157.72	147.85	137.66	127.13	116.24	105.00	93.37	81.35	68.91	56.05	42.75	28.99	14.74	48
49	202.65	194.21	185.51	176.54	167.24	157.72	147.84	137.65	127.12	116.24	104.99	93.36	81.34	68.91	56.05	42.75	28.99	14.74	49
50	202.68	194.23	185.53	176.55	167.28	157.72	147.84	137.65	127.11	116.23	104.99	93.36	81.34	68.91	56.05	42.75	28.99	14.74	50
51	.....	194.28	185.56	176.57	167.29	157.73	147.85	137.65	127.12	116.23	104.98	93.36	81.34	68.91	56.05	42.75	28.99	14.74	51
52	.....	.....	185.60	176.60	167.32	157.74	147.86	137.66	127.12	116.23	104.99	93.36	81.34	68.91	56.05	42.75	28.99	14.74	52
53	.....	.....	.....	176.65	167.36	157.77	147.88	137.67	127.13	116.24	104.99	93.36	81.34	68.91	56.05	42.75	28.99	14.74	53
54	.....	.....	.....	.....	167.40	157.81	147.91	137.69	127.14	116.25	105.00	93.36	81.32	68.91	56.05	42.75	28.99	14.74	54
55	.....	.....	.....	.....	.....	157.85	147.94	137.71	127.16	116.26	105.00	93.37	81.34	68.91	56.05	42.75	28.99	14.74	55
56	.....	.....	.....	.....	.....	.....	147.98	137.74	127.18	116.28	105.01	93.38	81.35	68.91	56.05	42.75	28.99	14.74	56
57	.....	.....	.....	.....	.....	.....	.....	137.78	127.21	116.29	105.03	93.38	81.35	68.92	56.05	42.75	28.99	14.74	57
58	.....	.....	.....	.....	.....	.....	.....	.....	127.24	116.32	105.04	93.39	81.36	68.92	56.06	42.75	28.99	14.74	58
59	.....	.....	.....	.....	.....	.....	.....	.....	.....	116.34	105.06	93.41	81.37	68.92	56.06	42.75	28.99	14.74	59
60	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	105.08	93.42	81.37	68.93	56.06	42.75	28.99	14.74	60
61	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	93.43	81.38	68.93	56.06	42.76	28.99	14.74	61
62	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	81.39	68.94	56.07	42.76	28.99	14.74	62
63	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	68.95	56.07	42.76	28.99	14.74	63
64	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	56.07	42.76	28.99	14.74	64
65	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	42.76	28.99	14.75	65
66	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	28.99	14.75	66

TABLE 4

CHILDREN (NO WIDOW)

(Taken in Ascending Order of Age)

PRESENT VALUE PER $100 ANNUAL WAGES PAYABLE UNTIL AGE 18

Age of Child	First Child (1)	Second Child (2)	Third Child (3)	Fourth Child (4)	Fifth Child (5)	Age of Child
0	468.29	—	—	—	—	0
1	449.24	202.52	—	—	—	1
2	429.52	193.14	184.55	—	—	2
3	409.11	183.48	175.73	35.03	—	3
4	387.96	173.54	166.60	32.38	3.50	4
5	366.08	163.31	157.16	29.75	3.03	5
6	343.41	152.78	147.40	27.13	2.59	6
7	319.95	141.94	137.29	24.54	2.18	7
8	295.65	130.79	126.84	21.98	1.81	8
9	270.49	119.31	116.03	19.45	1.47	9
10	244.45	107.50	104.84	16.98	1.16	10
11	217.48	95.35	93.26	14.55	.89	11
12	189.56	82.86	81.27	12.20	.65	12
13	160.65	70.00	68.87	9.91	.45	13
14	130.71	56.77	56.03	7.71	.29	14
15	99.72	43.17	42.74	5.61	.16	15
16	67.63	29.18	28.98	3.61	.07	16
17	34.40	14.79	14.74	1.74	.02	17