

PRESENT VALUES OF OASI BENEFITS AWARDED AND  
IN CURRENT PAYMENT STATUS, 1940-46

by

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This study has been prepared for the use of the staff of the Social Security Administration and for limited circulation to other administrative, insurance, and research persons concerned with the subject treated. It has not been submitted to the Commissioner for Social Security for official approval.

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## FOREWORD

This study makes an actuarial appraisal of the benefit awards for each year, 1940-46, as to their present value at the time of award and also, perhaps more significantly, for those in current payment status on December 31 of each such year. This method of analysis is quite similar to valuations of private insurance and retirement plans. But there are significant differences; for example, OASI benefits cease or are suspended for other than demographic reasons, notably where the beneficiary is in covered employment or becomes eligible for another type of benefit; and full actuarial reserve financing is not necessarily essential or required under a social insurance program because of its compulsory and permanent nature. It is beyond the scope of this report to deal with the latter aspects.

It is perfectly valid and probably useful to make calculations based on reserve financing even though actual financing may be done on a straight or a modified pay-as-you-go system with or without ultimate government contribution from the general Treasury. For instance, even under the extreme case of a noncontributory Government retirement system where pensions are payable directly from general appropriations, it is often interesting and instructive to carry out at least evaluations of the pensions currently in force even though it is not intended actually to set up as liabilities the amounts shown as the "required reserves".

The results of the study indicate that over the 7-year period, the present value of the claims awards has represented a very substantial portion of the contribution income, principally because the contribution rate has been at a low level as compared with the rate ultimately scheduled. At the same time, the trust fund has always been materially in excess of the "actual reserve required" for benefits in current payment status, although it naturally falls far short of covering the liability for both claims in current payment status and future claims based on benefit rights accrued to date. It may be emphasized that the latter liability is susceptible of many widely different meanings and thus is not as clear-cut in definition and interpretation as the former.

Robert J. Myers  
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PRESENT VALUES OF OASI BENEFITS AWARDED AND  
IN CURRENT PAYMENT STATUS, 1940-46

A. Introduction

This study presents a determination of the present value<sup>1/</sup>, or actuarial reserve liability, in regard to claims approved under the various types of benefits under the old-age and survivors insurance system. Such present values have been calculated under three different concepts: (1) on actual awards of a year; (2) on "accruable" benefits successively arising from wage credits underlying actual awards of a year (as will be defined hereafter); and (3) on benefits in current payment status on a certain date. There are other concepts of actuarial liability which for the purpose of this study are not considered because of their indefinite and intangible nature. For instance, there is the accrued liability for benefits in the future based on cumulative wage credits of active insured workers who have not yet filed claims, received awards, or become entitled to benefits. On account of its compulsory and permanent nature, the liability under the OASI system does not have the definite contractual liability aspect of private insurance nor the need for the full recognition of such liability. For this reason, there is not the necessity for a meticulous valuation of all possible liabilities which may exist, even if this were possible. Another concept of liability is the amount in the OASI trust fund, which is increased by contributions and interest and decreased by benefit payments and administrative expenses.

The present value of awards of a year is compared with contributions collected in that year. Also, the present value of the benefits in current payment status is compared with the trust fund at the same date, and finally the increase in such present values for a year is compared with the increase in the trust fund for such year. These comparisons test the "actuarial adequacy" of the contributions of a year in relation to that certain portion of liability arising from the awards of that year and compare the liability under claims in current payment status with the balance in the trust fund at the same date. These analyses do not imply that full, or even partial actuarial financing is necessary, or even desirable, for the social insurance plan of the OASI system.

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<sup>1/</sup> The actuarial term "present value" at the present or at a specified time (such as the date of award) is the amount equivalent to future installments discounted by theoretical or assumed rates of interest, mortality and sometimes remarriage or other contingencies.

### B. Methodology and Assumptions

The first monthly benefit awards were made in January 1940. Data on these awards and on lump-sum payments are now available through 1946. The monthly amounts of benefits awarded during each year and the monthly amounts of benefits in current payment status as of the end of each of these 7 years are given by type of benefit and sex of beneficiary in Tables 1 and 2. Further data are available on the age and marital status of recipients of awards and the monthly amount of benefit awarded. Such data are contained in various issues of the Social Security Yearbook and in the unpublished annual issue of "Substantative Claims Statistics," prepared by the Bureau of Old-Age and Survivors Insurance.

From these data the valuation of claim liabilities was made by group methods. In other words, all benefits of the same type and duration payable to a beneficiary of the same sex and age were valued as a group by multiplying the total amount of monthly benefits in such group by the appropriate annuity factor (present value of \$1.00 per month discounted at 2% compound interest, with life contingencies, and also remarriage probabilities for widows). For example, the monthly benefit amount of 1946 primary awards to all men age 66 was \$911,078. A life annuity of \$1 per month is worth \$118.92 according to the U.S. White Male 1939-41 Mortality Table and 2% interest, resulting in a present value of \$108,741,000 for this age group, composed of single, married, widowed and divorced men of all races.

Present values throughout this study are based on the United States White Life Tables 1939-41, and 2% interest. In practice, neither mortality rates nor interest rates remain constant; on the other hand, their trends in the future cannot be accurately determined. Herein no account is taken of improving mortality, as the 1939-41 rates of mortality on white lives are assumed to remain constant. The use of mortality rates based on white lives tends to overstate the liability somewhat because the survival rate of white lives is higher than that of non-white lives (except beyond age 65 where the reported rates are about the same); this acts as an offset against a possible understatement in liability if there should be considerable improvement in mortality over the long range. Some improvement since 1939-41 is already indicated by the rates in the U.S. Abridged Life Tables for 1945.

All benefits in current payment status are assumed to remain in force in such status until death or prior termination such as attainment of age 18 of child for child's and widow's current benefits according to the statutes. Since widow's benefits terminate by remarriage, this factor is taken into consideration by utilizing remarriage rates of 150% of those in the American Remarriage Table in

Table 1

MONTHLY AMOUNT OF BENEFITS AWARDED DURING YEAR  
(In thousands)

<u>Type of Benefit</u>	<u>1940</u>	<u>1941</u>	<u>1942</u>	<u>1943</u>	<u>1944</u>	<u>1945</u>	<u>1946</u>
Primary							
Male	\$2731	\$2348	\$2106	\$1937	\$2436	\$4258	\$ 6034
Female	274	256	249	245	273	391	550
Wife's	420	436	414	409	518	822	1172
Widow's (aged)	94	222	296	394	498	602	785
Widow's current	456	591	622	705	852	1094	914
Child's							
Male	370	467	479	540	639	815	754
Female	355	452	471	530	618	800	739
Parent's							
Male	2	4	4	4	4	5	5
Female	9	13	13	13	14	18	19
Total, monthly	4710	4790	4655	4777	5853	8804	10971

Note: Amount of monthly benefits awarded during year without adjustment for terminations or payments withheld at time of award for statutory reasons.



Table 2

MONTHLY AMOUNT OF BENEFITS IN CURRENT PAYMENT STATUS, DECEMBER 31  
(In thousands)

<u>Type of Benefit</u>	<u>1940</u>	<u>1941</u>	<u>1942</u>	<u>1943</u>	<u>1944</u>	<u>1945</u>	<u>1946</u>
Primary							
Male	\$2,293	\$4,069	\$ 5,313	\$ 6,313	\$ 7,909	\$11,153	\$15,420
Female	246	470	676	858	1,071	1,385	1,810
Wife's	361	691	941	1,151	1,460	2,040	2,805
Widow's (aged)	90	302	577	930	1,367	1,893	2,568
Widow's current	402	826	1,124	1,384	1,781	2,391	2,577
Child's							
Male	340	723	1,058	1,407	1,847	2,437	2,933
Female	328	708	1,054	1,415	1,844	2,421	2,871
Parent's							
Male	2	5	8	10	13	16	19
Female	9	20	31	42	51	65	78
Total	4,070	7,815	10,782	13,510	17,344	23,801	31,081

Note: Amount of monthly benefits in force on December 31 of year indicated further adjusted to exclude benefits in deferred or conditional status.

valuing this type of benefit. The remarriage clause for a woman widowed at age 27 reduces the present value of her annuity beginning at age 65 by about 75%. Specifically the \$1.00 per month life annuity has a present value of \$48.00, the same annuity terminating on remarriage only \$11.70. However, the minor effects of termination due to divorce of wives of primary beneficiaries and marriage or adoption of child beneficiaries have been ignored. The assumption has also been made that the size of the monthly benefit remains constant throughout and is not adjusted upward by recomputation based on subsequent wages or subsequent legislation.

More important, it is assumed that benefits are not suspended because of covered employment of the beneficiary and that benefits are not reduced or eliminated by the surviving beneficiary earning primary benefits in her own right (as will be particularly apt to be the case for young widows now in the awards). On the other hand, there is an understatement of potential liability in respect to awards based on deaths in the year, in that not all eligible beneficiaries file at once (although they may do so later), either through neglect or ignorance. In summary, the present values under awards already made are defined in such a fashion that they represent an overstatement of what will actually be paid, but are a valid indication of maximum potential liability.

At this point there might be mentioned the several successive administrative methods of handling of primary benefit claims in the past in respect to eligible individuals who have not ceased working in covered employment, and correspondingly their effect on these analyses. Until about the middle of 1945, relatively few such eligible individuals (represented by about 5% of the total primary benefit awards) filed claims (and thus few had benefits awarded) since by so doing their benefit amounts would have been "frozen" and would not have taken into account the generally relatively high wages of the war years. However, thereafter and until the middle of 1947 such individuals were allowed to file "inactive freezes", or informal applications, which fully protected their rights without possibility of lower benefit amounts; but the many cases of this type were not counted as awards until "retirement" actually took place. Since the middle of 1947, the procedure has been changed so that now such cases are all made "awards" immediately even though the individuals continue at work; as a result, many awards are made (since it can only be to the individuals' advantage) even though primary benefits may not be paid for many years.

As may be seen from the above description, the awards data for 1940-46 contained relatively few cases where primary benefits are not immediately payable. However, after the middle of 1947 the awards data will be unduly inflated by including many primary benefit awards where retirement has not yet occurred. Since this study considers only the period 1940-46, its validity is not affected. But any future study on the awards basis will require modification and adjustment to allow for this administrative artificiality.

C. Present Value of Benefits Awarded in the Year

The present value of benefits awarded during a year is the equivalent single payment or lump-sum liability for such monthly benefits payable from date of award and continuing only until termination of the original type of benefit. Thus, no account is taken of the possibility of deferred benefits, such as widow's benefits in respect to those receiving award of wife's or widow's current benefits, or of the possibility of payment of lump-sum benefits in respect to primary benefit awards. The valuation is for each year's awards separately, as also for each type of benefit (see Table 3 and Chart 1). The annuity factor, in general, is taken at the age at the time of award; that is, the difference between the year of award and the year of birth. The product of this annuity factor by the monthly amount of awards is the present value--not at any one date in the year of award, but rather the liability on the date of award, due to the awards made during such year. The present value of benefits awarded increased from a level of about \$450 million in each of the 4 years, 1940-43, to \$1087 million in 1946, or 140%. The present value of primary benefit awards decreased from \$329 million in 1940 to \$232 million in 1943 and then increased to \$691 million in 1946, or about 200%, the largest increase of any type of benefit. The decrease for primary benefits from 1940 to 1943 was due to the decrease in retirement claims because of the favorable employment conditions prevailing for aged persons during the war years. A percentage distribution of present values of awards by type of benefit would show that primary benefits, including the wife's supplement, accounted for 76% of the total in 1940, only 55% in 1943, and 71% in 1946. This increasing trend since 1943 may be expected to continue over the long range because of the aging population and maturing of the system.

Table 3

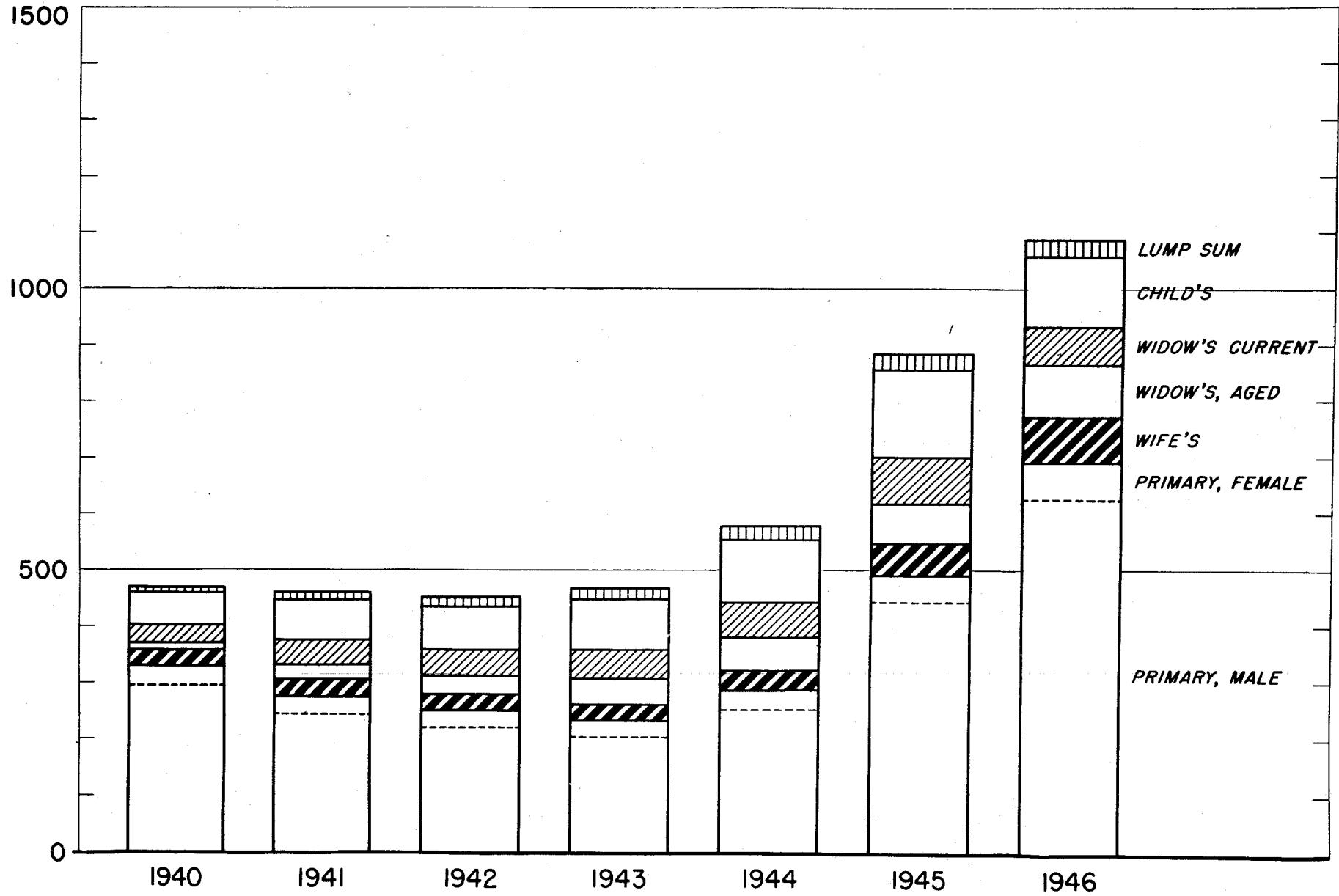
PRESENT VALUES OF BENEFITS AWARDED DURING YEAR  
(In millions)

Type of Original Benefit	1940	1941	1942	1943	1944	1945	1946
Primary							
Male	\$295	\$244	\$220	\$202	\$253	\$443	\$ 626
Female	34	31	30	30	33	47	65
Wife's	28	30	28	28	36	57	80
Widow's (aged)	11	26	34	46	58	71	92
Widow's current	34	44	46	53	64	84	68
Child's							
Male	29	37	39	46	57	78	63
Female	28	36	38	44	54	76	62
Parent's							
Male	.2	.3	.3	.3	.4	.4	.4
Female	.9	1.2	1.2	1.3	1.4	1.6	1.9
Lump Sum							
Male	8	12	13	16	20	24	24
Female	1	2	2	2	2	3	3
Total	469	461	452	469	579	884	1,087

Note: The calculations are based on U. S. white male and female 1939-41 mortality rates, 2% interest rate, and remarriage rate of widows of 150% of American Remarriage Table. The following elements are not considered: marriage or adoption of children, suspension of benefit because of work clause, divorce of wife, reduction or elimination of wife's or widow's benefit because of having primary benefit in own right, reduction of lump sum where payable to other than spouse and funeral expense less than formula amount, and deferred parent's benefit.

CHART I.  
PRESENT VALUES OF BENEFITS AWARDED IN YEAR

MILLIONS OF DOLLARS



D. Present Value of "Accruable" Benefits Awarded in the Year

This concept of present value is one which applies not only to the original type of benefit, but also to all future types, such as wife's, widow's, lump-sum benefit, etc., which may develop from the retired or deceased worker's underlying wage credits. This might also have been called the "cohort" basis. As an example of the "accruable" method, consider a retired worker who is awarded a primary benefit while his wife is yet under 65. If both live until she is 65, she becomes eligible to receive a wife's benefit. If he dies after she has attained age 65, she would then be eligible to receive a widow's benefit immediately, but if he should die before she reaches age 65, she would be entitled to receive an immediate lump-sum benefit and a deferred widow's benefit beginning at age 65. If she predeceases her husband, a lump-sum benefit is payable to some other beneficiary at his death. Under this accruable method all types of benefit are evaluated, including wife's deferred benefits, the several categories of aged widow's benefits (both immediate upon the death of the husband and deferred), and various types of deferred lump-sum benefits.

However, to be consistent with the logic of this concept there are not included in the evaluation "subsequent" awards of widow's and wife's benefits, where the woman was under 65 at time of her husband's death or retirement, or awards of widow's benefits where her husband was a primary beneficiary, since in all such cases these deferred benefits were evaluated as of the time of the first award on the particular wage record. Also, for purposes of simplicity, the relatively unimportant category of parent's benefits was not evaluated on this accruable basis but rather the results on the "awards" basis were used again. Lump-sum benefits under the accruable basis include all those under the award basis except the lump sums which become payable in respect to primary beneficiaries. In addition, there are included liabilities for lump sums which may be payable in the future in respect to primary beneficiaries.

The liability on this accruable basis, shown in Table 4 and Chart 2, is higher than on the award basis by 43% in the first two years of benefit payment, decreasing to 35% in 1946; in the future the liability on these two bases will tend to approach each other still more closely. On this basis the present value of the total benefits awarded was about \$650 million in each year from 1940 to 1943 and then increased steadily so that for 1946 it was almost \$1½ billion. In 1946, the present value of wife's benefits awards was about 60% higher, aged widow's benefits 350% higher, and lump-sum benefits 70% higher than under the awards basis, with no increase for the other benefits. A percentage distribution would show that the primary benefits hold first place, with widow's benefits increasing relatively most rapidly.

Table 4

PRESENT VALUES OF "ACCRUABLE" BENEFITS<sup>a</sup>/AWARDED DURING YEAR  
(In millions)

Type of Benefit	1940	1941	1942	1943	1944	1945	1946
Primary							
Male	\$295	\$244	\$220	\$202	\$253	\$443	\$626
Female	34	31	30	30	33	47	65
Wife's							
Immediate, wife over 65	28	30	28	28	36	57	80
Deferred, wife under 65	23	17	16	15	18	33	46
Widow's (aged)							
Immediate, widow over 65	8	14	14	16	19	20	23
Deferred, widow under 65	73	96	100	116	129	138	151
Deferred, wife over 65	31	32	31	31	39	62	88
Deferred, wife under 65	68	54	50	46	58	105	149
Widow's current	34	44	46	53	64	84	68
Child's							
Male	29	37	39	46	57	78	63
Female	28	36	38	44	54	76	62
Parent's							
Male	.2	.3	.3	.3	.4	.4	.4
Female	.9	1.2	1.2	1.3	1.4	1.8	1.9
Lump sum							
Immediate, male <sup>b</sup>	8	11	12	14	18	21	21
Immediate, female <sup>b</sup>	1	1	2	2	2	2	3
Deferred, male <sup>c</sup>	3	3	3	3	3	5	8
Deferred, female <sup>c</sup>	1	1	1	1	1	2	3
Deferred, potential, wife over 65 <sup>d</sup>	2	1	1	1	1	2	3
Deferred, potential, wife under 65 <sup>d</sup>	4	3	3	3	3	6	8
Total	670	658	635	653	791	1184	1469

- a/ This term as used in this study denotes the original and subsequent types of benefits based on wage credits underlying awards in the year, except where such wage credits had been used previously in determining a primary benefit.
- b/ In respect to all deaths under the awards of the year, except those of primary beneficiaries.
- c/ In respect to future deaths under all awards of primary benefits in the year, except awards to married men (and the relatively few non-married persons who will have dependent children under 18 at their death).
- d/ In respect to future deaths under all awards of primary benefits to married men in the year. Lump sum payable only if wife is under 65 at husband's death or if wife predeceases husband.

**Note:** The calculations are based on U.S. white male and female 1939-41 mortality, 2% interest rate, and remarriage rate of widows of 150% of American Remarriage Table. The following elements are not considered: marriage or adoption of children; suspension of benefit because of work clause; divorce of wife; reduction or elimination of wife's or widow's benefit because of having primary benefit in own right; reduction of lump sum where payable to other than spouse and funeral expense less than formula amount; and deferred parent's benefit.

E. Present Value of Benefits in Current Payment Status  
on December 31

Under this concept, the liability is evaluated under claims in current payment status as of December 31 of each year. Any subsequent net increase or net decrease in claims is taken into account in future valuations. The factor of withdrawal from, or entering upon, covered employment in the past is, in effect, allowed for automatically. The benefit roll on December 31 is the basis of the liability on account of awards of all previous years in current payment status at that date at the then attained age. It would be the correct figure for use in a balance sheet, but as stated it would not include the liability on account of insured workers who are not eligible for benefit at that time, nor of those workers who have made claim and have not yet received awards, nor of those who have received awards but are not receiving benefits currently, nor of deferred benefits based on wage records of deceased fully insured wage earners.

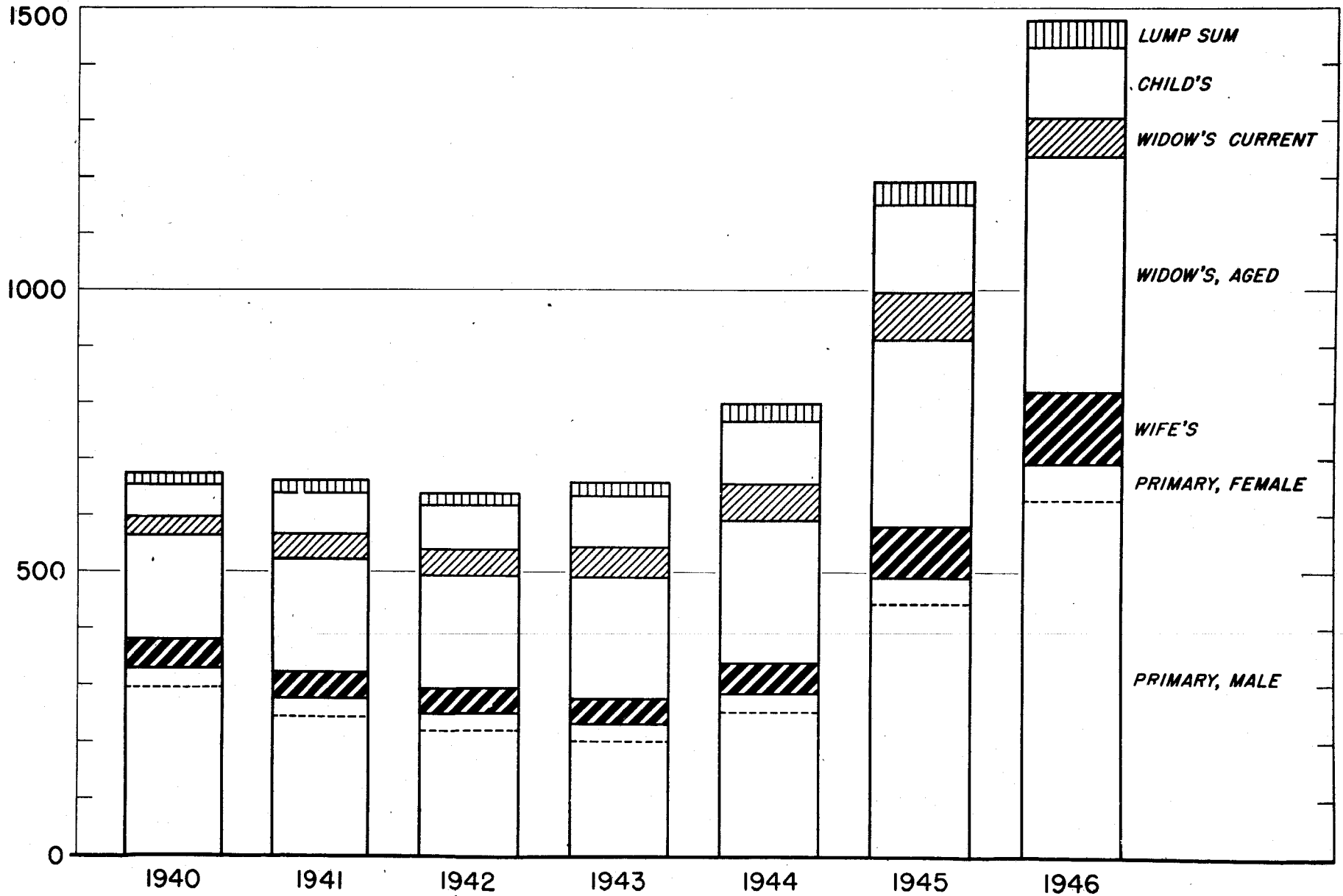
The present value of benefits in current payment status was calculated only on the type of benefit currently in force. The further liability under the accruable concept for monthly benefits and lump-sum death payments, though proper in principle, was not calculated on account of lack of sufficient data, such as marital status, distribution of ages of wives and husbands, etc., for the group in current payment status. Thus, the liability is understated by possibly 25-30%, if the corresponding ratios of present values under awards is applicable, but there are some elements tending toward overstatement that were not considered: termination of benefits because of marriage, adoption of children, divorce of wife, suspension of benefits because of the work clause, and reduction or elimination of wife's or widow's benefit because of having primary benefit in her own right.

The liability under this concept is shown in Table 5 and Chart 3. Since the benefit roll is on a cumulative basis, there is an increase in liability each year, which trend may be expected to persist until the system becomes mature. Thus, the present value for all types of benefits increased from less than \$400 million at the end of 1940 to \$2½ billion at the end of 1946. The smallest annual increase amounted to \$232 million, from December 31, 1942 to December 31, 1943, and the largest to \$629 million, from December 31, 1945 to December 31, 1946. A percentage distribution of present values by types of benefit would show that primary benefits and wife's benefits combined accounted for 76% of the total on December 31, 1940, only 62% at the end of 1944, and 65% at the end of 1946. As in awards, the increasing relative importance of primary benefits and decreasing relative importance of survivor benefits may be expected to continue in the future. The relative share of widow's current and child's benefit liability has remained very nearly constant at 24-28% of the total, while that of aged widow's benefits has increased from 3 to 10%.



CHART 2.  
PRESENT VALUES OF "ACCRUABLE" BENEFITS AWARDED IN YEAR

MILLIONS OF DOLLARS



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Table 5

PRESENT VALUES OF BENEFITS IN CURRENT PAYMENT STATUS, DECEMBER 31  
(In millions)

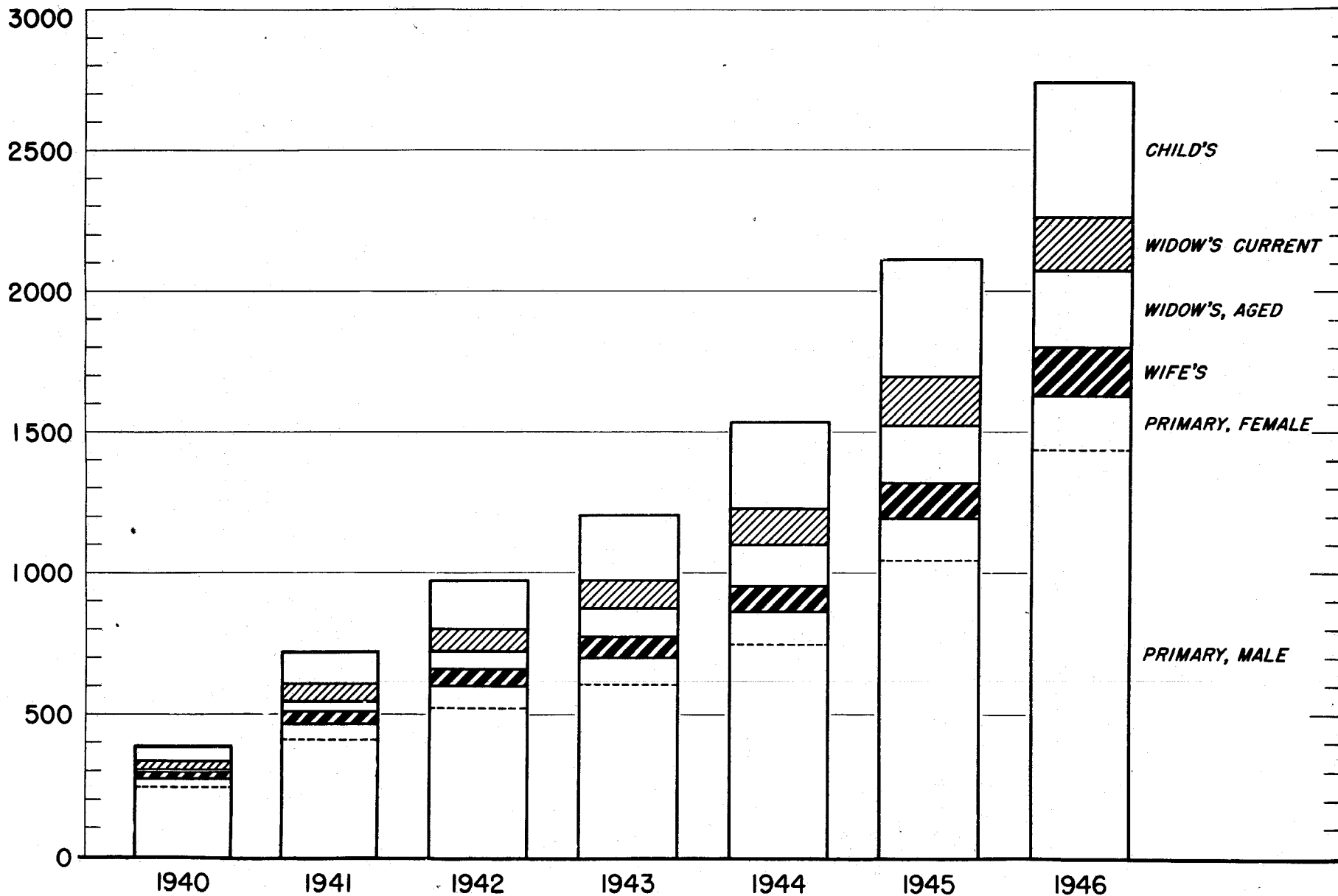
Type of Original Benefit	1940	1941	1942	1943	1944	1945	1946
Primary							
Male	\$241	\$411	\$521	\$ 604	\$ 744	\$1,044	\$1,435
Female	30	54	76	95	116	148	191
Wife's	24	45	60	73	91	127	175
Widow's (aged)	10	34	64	101	147	202	272
Widow's current	30	61	81	99	129	176	188
Child's							
Male	27	58	86	116	154	207	240
Female	25	55	83	113	148	200	231
Parent's							
Male	.2	.5	.7	.8	1.1	1.3	1.5
Female	.8	1.9	2.9	3.8	4.7	5.9	7.1
Total	388	720	974	1,206	1,535	2,111	2,740

Note: The calculations are based on U.S. white male and female 1939-41 mortality rates, 2% interest rate, and remarriage rate of widows of 150% of American Remarriage Table. The following elements are not considered: Marriage or adoption of children, suspension of benefit because of work clause, divorce of wife, reduction or elimination of wife's or widow's benefit because of having primary benefit in own right, and deferred parent's benefit.

CHART 3.

PRESENT VALUES OF BENEFITS IN CURRENT PAYMENT STATUS AS OF DECEMBER 31

MILLIONS OF DOLLARS



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F. Average Annuity Factors

Table 6 shows the aggregate average monthly annuity factors developing from the present values of benefits for the awards in each year. These annuity factors represent the present value of \$1 per month payable until termination of the benefit by death, remarriage of widow, or attainment of age 18 by the child. The highest factors are those for female primary benefits, which range from \$123 in 1940 to \$119 in 1946; the lowest are those for wife's benefits, which range from \$67 in 1940 to \$69 in 1946. These factors (for awards) should be relatively stable from year to year, because the age at award changes but little. This is true for most types of benefits, especially if the first year, 1940, be excluded from the comparison. The increasing factor for child's benefits after 1942 is probably due to the toll of the war, which took relatively more of the younger fathers who left young children to receive benefits; the factors for 1946 are close to the prewar level.

Table 7 shows the average monthly annuity factors developing from the present values of benefits in current payment status on each December 31. The highest factor, \$106, is the same for both female primaries and aged widows, the lowest, \$62, applies to wives. These factors are only slightly less than those applicable to awards, but the divergence is becoming greater each year. This is for the reason that the average age of recipients in current payment status is increasing each year, leaving a shorter time in which benefits are receivable, whereas the average age under awards varies only slightly from year to year. Thus, as the system ages, the annuity factor for those in current payment status decreases for every type of benefit, with but few exceptions. This trend may be expected to continue with time until an ultimate condition has been reached.

Table 6

AVERAGE MONTHLY ANNUITY FACTORS<sup>a/</sup> DEVELOPING FROM PRESENT VALUES  
OF BENEFITS AWARDED DURING YEAR

Benefit	1940	1941	1942	1943	1944	1945	1946
Primary	\$109.29	\$105.40	\$105.92	\$106.19	\$105.47	\$105.30	\$105.05
Male	107.93	103.89	104.28	104.40	103.83	103.99	103.81
Female	122.78	119.23	119.83	120.28	120.10	119.51	118.64
Wife's	67.40	67.80	68.61	69.40	69.13	68.75	68.61
Widow's (aged)	116.67	115.06	116.22	116.96	116.95	117.44	117.86
Widow's current	74.44	74.29	74.25	74.56	75.28	77.19	74.49
Child's	78.42	79.38	80.91	84.47	88.35	95.70	83.46
Male	79.14	79.92	81.05	85.20	88.86	96.20	83.66
Female	77.67	78.82	80.77	83.74	87.82	95.20	83.24
Parent's	93.70	94.48	93.97	94.61	95.55	97.64	97.29
Male	85.28	87.25	84.45	85.09	86.59	84.92	86.66
Female	95.80	96.55	96.87	97.24	98.40	101.03	99.84
Total	97.54	93.56	93.87	94.35	95.13	97.44	96.57

<sup>a/</sup> Each factor is the present value of \$1.00 per month until death or prior termination. Widow's current benefit is considered here as terminating only on remarriage or attainment of age 18 of the youngest child. Child's benefit is considered here as terminating only on attainment of age 18. Assumptions: U.S. white male and female 1939-41 mortality rates, 2% interest, and remarriage rate of widows of 150% of American Remarriage Table.

Table 7

AVERAGE MONTHLY ANNUITY FACTOR<sup>a/</sup> DEVELOPING FROM PRESENT VALUES  
OF BENEFITS IN CURRENT PAYMENT STATUS, DECEMBER 31

Benefits	1940	1941	1942	1943	1944	1945	1946
Primary	\$106.69	\$102.60	\$99.73	\$97.39	\$95.75	\$95.07	\$94.40
Male	105.25	101.08	98.06	95.64	94.06	93.63	93.09
Female	120.14	115.77	112.85	110.30	108.19	106.72	105.56
Wife's	65.96	64.95	63.92	63.14	62.61	62.45	62.32
Widow's (aged)	114.10	111.74	110.32	109.15	107.80	106.62	105.90
Widow's current	74.41	73.66	72.50	71.88	72.34	73.66	73.00
Child's	78.25	78.83	79.73	81.15	81.78	83.72	81.02
Male	79.26	80.05	81.02	82.77	83.30	84.99	81.70
Female	77.21	77.58	78.43	79.55	80.26	82.45	80.33
Parent's	92.04	91.46	90.65	89.57	88.87	88.63	88.32
Male	83.89	83.72	82.39	81.46	80.66	79.17	78.27
Female	94.02	93.50	92.77	91.57	90.97	91.01	90.78
Total	95.35	92.18	90.38	89.25	88.51	88.70	88.17

<sup>a/</sup> Each factor is the present value of \$1.00 per month until death or prior termination. Widow's current benefit is considered here as terminating only on remarriage or attainment of age 18 of the youngest child. Child's benefit is considered here as terminating only on attainment of age 18. Assumptions: U.S. white male and female 1939-41 mortality rates, 2% interest, and remarriage rate of widows of 150% of American Remarriage Table.

G. Relationship of Present Values to Contributions and to Trust Fund

The results in Table 8 give us some idea as to the relationship between liability under a year's awards, and contributions collected in the same year. Thus the last column shows that liabilities on the accruable basis incurred in 1940 were equivalent to slightly more than the contributions collected, but this ratio decreased to about 50% in 1943 and then increased to 113% in 1946. This indicates that on this basis, under the assumptions used, in 1946, contributions become inadequate "actuarially" to support the liability under the gross awards of that year. It will be interesting to note the size of this ratio for 1947 for which data are not yet available. However, it is quite likely that the ratio for 1947 will fall to about 100%, or possibly slightly below, since the contributions collected increased by 20% (to \$1557 million), while the number of monthly benefits awarded increased by 5% (from 547,000 to 573,000), or a relative negative net change of about 15%.

Table 9 serves to help answer the question as to whether the trust fund is sufficient to cover the benefits in current payment status. Column (4) shows that the ratio of the present value of benefits in current payment status to the balance in the trust fund was only about 25% in 1941-44, but had increased to about 34% at the end of 1946. The liability on December 31, 1946 was \$2.74 billion, or over  $\frac{1}{3}$  of the balance of \$8.15 billion in the trust fund. If this liability were computed on the accruable basis, it would perhaps amount to about \$4 billion, or about  $\frac{1}{2}$  of the trust fund.

The last column shows that the annual increase in liability expressed as a ratio to the annual increase in the trust fund was at a minimum of 20% for 1943, but had risen to 61% for 1946. If the ratio should exceed 100% in any year, it would indicate that the trust fund did not increase sufficiently to take care of the increase in liabilities for the year under outstanding claims. Again, this ratio would be greater if the liability were computed on the accruable basis.

In conclusion, this study shows that the present value of both awards and accruable benefits awarded has increased each year from 1942 to 1946; the present value of benefits in current payment status has increased steadily every year, 1940-1946. All three items have increased more rapidly during recent years. The liability for accruable claims awarded currently (1947) is about equal to current contribution income at the 2% combined rate. In a private insurance system this might be considered a threat to solvency, but the situation is entirely different under a compulsory, governmental social insurance system. The trust fund now on hand is considerably in excess of the liability for claims in current payment status although the difference will diminish as time goes by.

Table 8

COMPARISON OF BENEFITS PAID, CONTRIBUTIONS COLLECTED, AND  
PRESENT VALUES OF AWARDS DURING YEAR  
(in millions)

(1)	(2)	(3)	(4)	(5)	(6)
Year	Benefit payments <sup>a/</sup>	Contributions collected <sup>a/</sup>	Present value of benefits awarded	Present value of "accruable" benefits awarded	(5) as % of (3)
1937	\$1	\$493	--	--	--
1938	10	474	--	--	--
1939	14	568	--	--	--
1940	35	637	\$469	\$670	105
1941	88	789	461	658	83
1942	131	1012	452	635	63
1943	166	1239	469	653	53
1944	209	1316	579	791	60
1945	274	1285	884	1184	92
1946	378	1295	1087	1469	113

<sup>a/</sup> Daily Statement of the U.S. Treasury.



Table 9

COMPARISON OF TRUST FUND AND PRESENT VALUE OF BENEFITS  
IN CURRENT PAYMENT STATUS, DECEMBER 31  
(in millions)

(1)	(2)	(3)	(4)	(5)
Year	Trust fund <sup>a/</sup>	Present value of benefits in current pay- ment status	(3) as % of (2)	Increase in (3) as % of increase in (2)
1937	\$766	--	--	--
1938	1132	--	--	--
1939	1724	--	--	--
1940	2031	\$388	19.1	126
1941	2762	720	26.1	45
1942	3688	974	26.4	27
1943	4820	1206	25.0	20
1944	6005	1535	25.6	28
1945	7121	2111	29.6	52
1946	8150	2740	33.6	61

<sup>a/</sup> Daily Statement of the U.S. Treasury.