

R E P O R T

on the

FIRST ACTUARIAL EVALUATION

OF THE

STATE EMPLOYEES' RETIREMENT SYSTEM

OF THE COMMONWEALTH OF PENNSYLVANIA

For the Period

January 1, 1924, to May 31, 1931

George A. Huggins, Actuary

May --- 1932

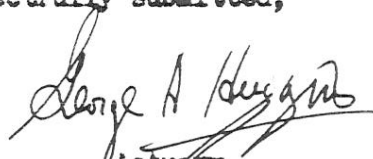
May 14, 1932

State Employees' Retirement Board,  
Commonwealth of Pennsylvania,  
Harrisburg, Pennsylvania.

Gentlemen:

I have the honor to present herewith the report on the first Evaluation of the State Employees' Retirement System, for the period of operation ending May 31, 1931.

Respectfully submitted,

  
Actuary

GAH:ELP

5c

## REPORT

on the

### EVALUATION OF THE STATE EMPLOYEES' RETIREMENT SYSTEM COMMONWEALTH OF PENNSYLVANIA, FOR THE PERIOD JANUARY 1, 1914, to MAY 31, 1931

Under the Act, establishing the State Employees' Retirement System, provision is made for periodical actuarial evaluations. This is the first one of the periodical evaluations and it covers the first seven (7) years and five (5) months of the operation of the Retirement System.

#### PURPOSES OF THE EVALUATION

When a retirement system is first put into operation, it has no experience of its own upon which to base the cost of the benefits provided, therefore, it is necessary for the Board, upon the advice of the actuary, to adopt certain tables as a basis for the required calculations.

These tables are generally standard tables of mortality and disability, but it is rarely possible to get any parallel experience of rates of withdrawal, or rates of superannuation, therefore, for the actuarial safety of the plan, whatever assumptions are made, along these lines, must of necessity be on a most conservative basis.

After the system has been in operation for some time, it becomes possible, through periodical evaluations, to determine, from the actual experience of the system, its own rates of mortality, disability, superannuation and withdrawal from service.

The results of the first evaluation are exceedingly important, but they are, of course, subject to conditions incident to the starting of the system, where the majority of the members are original members, and the minority are the newer members. The full effects on the body of members of the operation of the Retirement System have not yet made themselves felt. However, the various trends become apparent and, even though it may be possible to completely shift the operation of the system to the use of their own service tables, they can be taken into consideration in the matter of rates of contributions, from the standpoint of the welfare of the State, and the evaluation, to determine the prospective assets and liabilities of the fund.

#### THE OBJECTIVES OF THE EVALUATION

The Evaluation covers the following objectives:

- (1) Salary Scale; based upon the salaries received by the active members of the system.
- (2) The Rate of Mortality among Active Members: based upon the lives exposed and the actual deaths occurring among active members.

- (4) The Rate of Disability among Active Members; based upon the lives exposed and the actual retirements on account of disability occurring among active members.
- (5) The Rate of Withdrawal from Service; based upon the lives exposed and the actual withdrawals from active service for causes other than death, disability or superannuation.
- (5) The Rate of Superannuation; based upon the lives exposed and the members who retired and received superannuation retirement allowances.
- (6) The Rate of Mortality among Superannuated Lives; based upon the lives receiving superannuation retirement allowances during the entire period of the operation of the System, and the deaths occurring among those exposed to risk.
- (7) The Rate of Mortality among Disabled Lives; based upon the lives receiving disability retirement allowances during the entire period of the operation of the System, and the deaths occurring among those exposed to risk.
- (8) The Preparation of Complete Life and Service Tables; based upon the rates determined as above outlined.
- (9) The Preparation of Monetary Tables, to be used as a basis of determining the actuarial equivalents of the prospective assets and liabilities of the System, as of May 31, 1931.
- (10) The Valuation of the Several Assets and Liabilities of the System; based upon the monetary tables prepared.
- (11) A reconsideration of the rates of contribution of the members.
- (12) A restudy of the basis for determining the required appropriations from the Commonwealth for the several years.

PREPARATION OF DATA

A card was prepared for each active member of the System, showing, among other items, the membership number; the year of birth of the member; the age at entering State service; the calendar year of entering State service; the sex of the member; the years of service prior to January 1, 1925—if an Original Member; the salary basis for each year of service; and the classification of membership—whether Schedule I (1-160th basis) or Schedule II (1-100th basis). These cards were prepared from the original records in the office of the Board.

In the case of a terminated membership, the card also showed the date of the termination of membership; and the cause of termination, such as, retirement on account of superannuation or disability, death, withdrawal or dismissal, and involuntary withdrawals.

In the case of an annuitant or beneficiary member, full data as to the annuity was furnished: Such as the date of entering upon the annuity; the kind of annuity, whether a superannuation retirement allowance, or a disability retirement allowance, or an involuntary withdrawal allowance; the amounts of the annuities; and the options selected.

#### STUDIES BY SEX

The data was studied separately by sex. However, the actual experience showed no marked differences by sex, as revealed in the unadjusted rates of withdrawal, death and disability among the active members. Furthermore, the data was rather meagre, particularly as to deaths and disabilities, when separated by sex. It seemed best, therefore, to combine the exposures and the actual deaths, disabilities and superannuations, and to prepare rates for the membership as a whole. This is in accordance with the practice of the system heretofore, in that the same percentages for salary deductions have been used for male and female lives, and the same factors for determining the amounts of the retirement allowances.

#### LIVES EXPOSED TO RISK

The total exposure to risk of the active members, for the entire period of the operation of the System, was very carefully compiled, and determined to be as shown in Exhibit A. The total exposure expressed in life-years is 60,626.5. The lives exposed to risk run from age 15 to age 89, inclusive. The largest exposure at a given age was that for age 23— 2,448.75 years. This is the same status as if 2,448 lives at age 23 worked one year for the State. The life-years of exposure following age 23 dropped off gradually and with a surprising degree of regularity, until all the way up to age 89. This is the exposure among active members. The total number of lives involved in the whole study is 17,383.

#### (1) Salary Scale.

In Exhibit B, we show the graded average salary scale, according to attained ages. The salaries used in this study were those shown by the individual cards, as of May 31, 1951. The average salary for the original members was \$2,143; for the new members, \$1,405; and for all members, \$1,620.

#### (2) The Rate of Mortality Among Active Members.

The rates of mortality, according to the American Men Ultimate Table of Mortality, were applied to the exposures at each age, up to and including age 69, and resulted in total expected deaths among active members—during the period under observation—amounting to 551.24.

number of deaths among active members during this period of the actual to the expected deaths was 48.98%. The American Men Ultimate Table, 50% Mortality Basis, was used as a table of mortality among active lives. While this table shows variations from the experience table, at different ages, these variations were not material, and, for the exposure as a whole, it represented practically the actual experience. The rates of mortality arrived at by this method are shown in Exhibit C.

### (3) The Rate of Disability Among Active Members.

Processes, similar to those followed in arriving at an experience rate of mortality, were used in arriving at a rate of disability.

Hunter's Rate of Disability was applied to the exposures at each age, up to and including age 59, and, as a result, there was shown a total number of disabilities expected, amounting to 54.34, whereas, the actual number of disability retirement allowances granted during the period was 58; a ratio of actual to expected disabilities of 110%. Here, again, the variations from this table at the different ages were not material, so 110% of the Hunter's Table was adopted as the Disability Experience Table of the System. The modified table used is shown in Exhibit C.

### (4) The Rate of Withdrawal from Service.

The actual withdrawals were scheduled according to age at withdrawal, and compared with the exposures at each age. The ratios obtained gave an unadjusted withdrawal rate. This rate was then adjusted or graduated by graphic method and the adjusted rates were adopted as the experience rates. These are also shown in Exhibit C.

The withdrawal rate is expressed as a ratio or percentage of the exposure. It begins at 5.71% at age 15, increases steadily up to age 24, where it reaches 14.25%; then gradually reduces, falling below 10% at age 32; below 6% at age 45; and is below 4% by the time age 59 is reached. The average withdrawal rate for the group as a whole, under age 60, was 8.22.

For the purposes of this study, the withdrawal rate was limited to active members under 60 years of age, because 60 is the minimum age for superannuation retirement and, thereafter, any one leaving service would be considered as retired on account of superannuation, rather than as withdrawn by resignation or dismissal.

The rates of withdrawal obtained from the combined membership are somewhat higher than those experienced wholly by the group solely of Original Members, and lower than those of the group solely of New Members. In this study, there were included 5,166 withdrawals from active service under age 60.

### Superannuation.

Calculations were made, based upon the age of superannuation attained the minimum retirement age of 60, because the compulsory retirement age provided in the Retirement System. In some few cases where service was continued beyond age 70. The total number of members continuing in service beyond age 70 was not material. For the purposes of this study and conservatism as to future superannuation costs, therefore, it was assumed that all employees would be retired by age 70, and the rate of superannuation was calculated accordingly.

### (6) The Rate of Mortality Among Superannuated Lives.

A study was made of the rate of mortality among the lives which had been retired on account of superannuation. The table of mortality used in calculating the amounts of the members' annuities was the McClintock Table of Mortality Among Male Lives, corrected on account of the monthly instalment payments, with interest at 4%.

The total life-years of exposure among superannuated lives were 961.5 male, and 339.75 female; a combined total of 1,301.25.

The deaths expected, according to the McClintock Table of Mortality (Male), were 68.35, as compared with the actual number of 65. For the female lives, the expected deaths, according to the McClintock Table of Mortality (Female) were 14.58, as against 10 actual. The total number of deaths expected, according to the McClintock Table of Mortality (Male) was 87.28, as against an actual of 83; a ratio of 95.1% of actual to expected deaths. In view of the fact that there is no marked deviation from the table, in the combined experience, even with such small groups of lives exposed, it seemed best to recommend the continuance of the McClintock Male Table, as a basis for calculations, until the results of further experience and studies are available.

### (7) Rate of Mortality Among Disabled Lives.

There were 12 deaths among disabled lives, as contrasted with 15.74, according to the Hunter's Table of Mortality Among Disabled Lives. The exposure was only 161.50 life-years, nevertheless, the results indicate a rather lower rate of mortality than this table. Therefore, we have adopted a modification of this table, as a conservative basis.

It is noted that the rate of the incidence of disability claims was somewhat higher than the standard table, but the death rate among the disabled lives was somewhat lower. Both tables have been adjusted accordingly.

### (8) Life and Service Tables.

Complete tables, showing the number surviving each year, out of 100,000 lives entering at age 15, were then prepared, based upon the graded rates of withdrawal, death, disability and superannuation, as above described. These tables are shown in Exhibit D.

the various elements are shown at ages 15 to 59, Exhibit E, they are shown from 60 to 70, inclusive.

and E the number of entrants is shown for each age, number of withdrawals, deaths and disabilities. For 100 persons entered the service of the State at age 15, some would pass out of active service each year through death, through disability, through withdrawal from service and through superannuation. As each age is attained, some of the original number would continue in service, not having previously died, become disabled, withdrawn from service, or having become superannuated.

The experience of the fund, for the first seven years and five months, reveals that, throughout a series of years, 106.8 per 1,000 employees, under 60 years of age, would pass out of the service through withdrawal; 2.2 per 1,000 through death; and 0.4 per 1,000 through disability.

A death rate of 2.2 per 1,000 among active workers, at ages 15 to 59, inclusive, is a very satisfactory death rate, from the standpoint of the health of the members. Likewise a disability rate of 0.4 per 1,000 is also quite low.

The reason for the separation of the life and service tables, ages 60 to 69, inclusive, from the lives under age 60, is that 60 is the minimum retirement age for superannuation, and for the purposes of this study, we have assumed age 70 as a limiting retirement age. Therefore, in the period 60 to 69, inclusive, we have lives passing out of active service through death and superannuation, rather than from death, withdrawal and disability when under age 60.

#### (9) Monetary Tables.

Monetary Tables were prepared from the life and service tables by combining them with interest factors at the rate of 4%. From these tables were obtained regular commutation factors, and the factors derived therefrom to be used in determining rates of contribution and in making the valuation of the several asset and liability items.



of the Several Assets and Liabilities of the  
upon the Monetary Tables Prepared.

VALUATION BALANCE SHEET

SHOWING FINANCIAL CONDITION OF STATE EMPLOYEES' RETIREMENT SYSTEM

AS OF MAY 31, 1931

ASSETS

Present Assets of Retirement System  
creditable to:

Member's Annuity Reserve Account .....	\$	147,407.41
Member's Annuity Savings Account .....		4,138,856.43
State Annuity Reserve Account .....		-
State Annuity Reserve Account No. 2 ..		3,232,792.54
Contingent Reserve Account .....		<u>929,037.46</u>

Total Present Assets .....

\$ 8,443,093.84

Present Value of Prospective Contributions payable to:

State Annuity Reserve Account No. 2 ..	\$	6,922,617.41
Contingent Reserve Account .....		<u>705,061.54</u>

Total Prospective Assets ...

7,627,678.95

TOTAL ASSETS .....

\$16,075,772.79

**VALUATION BALANCE SHEET SHOWING FINANCIAL CONDITION OF STATE EMPLOYEES' RETIREMENT SYSTEM - AS OF MAY 31, 1951**

LIABILITIES

Present Value of Members' Annuities payable to Original Members from State Annuity Reserve Account #2, as a result of contributions transferred to that account:

Superannuation .....	\$ 109,042.00	
Disability .....	21,110.00	
Withdrawal .....	<u>35,083.00</u>	
Total Present Value ...		\$ 165,235.00
Excess of Tabular Reserve over Fund .....		<u>17,827.59</u>
Total Member's Annuity Reserve Account .....		\$ 147,407.41

Present Value of State Annuities payable to Original Members from State Annuity Reserve Account #2, as a result of contributions made by the State:

State Annuities to Original Members now on Retirement Roll:

Superannuation .....	\$1,561,383.00	
Disability .....	130,449.00	
Withdrawal .....	<u>129,355.00</u>	
Total .....		\$1,821,187.00

State Annuities to Original Members now in Active Service, who may remain to receive annuities:

Superannuation .....	\$8,149,372.95	
Disability .....	<u>184,850.00</u>	
Total .....		<u>8,334,222.95</u>

Total Annuity Reserve Account #2 - \$10,155,409.95

Present Value of State Annuities payable to New Members from Reserves created in the Contingent Reserve Account as a result of contributions made by the State:

Superannuation .....	\$1,573,100.00	
Disability .....	<u>260,999.00</u>	

Total Present Value ... 1,834,099.00

Present Value of Benefits on Account of which Contributions have been Accumulated to date in the Member's Annuity Savings Account.

4,158,856.43

TOTAL LIABILITIES ..... \$16,075,771.79

(21) Investigation of the Rates of Contribution of the Members.

The studies made in connection with the Evaluation, the possibility of reducing the member's contributions through the System was thoroughly investigated.

The percentages of salary deductions adopted by the Board as a basis for member's dues, are calculated upon the basis of having the member's accumulations, including the interest additions, at the rate of 4%, compounded annually, provide annuities upon the attainment of the minimum age (60) that would be the equivalent of the State's annuities on the basis of 1-180th of the salary for each year of service under Schedule I and of 1-100th under Schedule II.

If the member continues in State service beyond the minimum age 60, and the full salary deductions are continued, the subsequent accumulations of the member's salary deductions and the interest additions will provide members' annuities in excess of the regular scale of benefits, as illustrated in the Exhibits F, G, H and I.

It will be noted from Exhibit F that, if the full deductions are made up to age 60, the members' annuities are within a few cents of the State annuities. For example, at entry age 40, the member's annuity, at age 60, is \$400.17, and the State annuity, \$400.00. At age 65, the member's annuity will have increased to \$660.04, and the State annuity to \$600.00. By the time age 70 is attained, if the employe continues in service until that age, and has the full deductions made, the member's annuity would have increased to \$1,081.09, and the State annuity to \$600.00.

Under the provisions of the act establishing the Retirement System, an employe has the right to discontinue his contributions, on and after attaining age 60, so that if the member's contributions cease, his accumulations thereafter will be increased only by interest additions at the rate of 4%, compounded annually, until retirement. Very naturally, therefore, the members' annuities under this plan will not increase beyond age 60 as greatly, as if the full deductions are continued beyond age 60.

As shown in Exhibit G, the accumulations at age 60, in the case of employes entering at the younger ages, are such that their accumulations thereafter will build the members' annuities which will increase. For example, at entry age 45, the member's annuity under this plan would increase to \$860.06, compared with \$700.00 for the State annuity, and the ratio of increase grows thereafter.

Up to entry age 45, the conditions are similar to those for the younger ages. At entry ages 50 and 55, however, the increases in the members' annuities fall behind the increases in the State annuities, as shown in Exhibit G.

In order to reduce the cost of membership to the employes as much as possible, provision is made under the Retirement System that, if the member's salary deduction is greater than 5%, he may elect to have his

salary deductions made on the 5% basis. Very naturally, since the [redacted] are calculated so that the members' annuities will [redacted] at the minimum superannuation age (60), if [redacted] to make his salary deductions on the 5% basis, then [redacted] member's annuity will be less than the State annuity.

[redacted], however, the member continues his contributions on the 5% basis beyond age 60, his accumulations will, at the younger ages, at entry produce members' annuities in excess of the State annuities. The age at which the members' annuities, under this plan, exceed the State annuities varies. For example, at entry age 30, as shown in Exhibit H, the members' annuities exceed the State annuities, after attaining an age between 60 and 65, namely, age 62. Similarly, at entry age 35, the members' annuities pass the State annuities at age 64. At entry age 40, the transition age is beyond age 65, that is, 66; at entry age 45, 68; while at entry age 50, it is 70; and for later entry ages, it is beyond 70.

In view of the fact that the member may elect the minimum deduction of 5%, and also elect to discontinue contributions at age 60, [redacted] has been prepared to show the proper results under such conditions. Here, again, at the younger entry ages, the members' annuities [redacted] the State annuities between ages 60 and 65. At entry age 35, the [redacted] annuity does not exceed the State annuity until after age 65 has been attained, that is, age 66. At entry age 40, the member's annuity [redacted] continues behind the State annuity until age 69. For entry ages [redacted] 45, the member's annuity would, under these conditions, be less than the State annuity, even if the employe continues in active service beyond age 70.

As shown in the headings, the exhibits are based upon salaries at the rate of \$2,000 per annum, and the State annuities are calculated in accordance with Schedule 2, 1-100th of the salary for each year of service, that is, \$20 on this salary basis. Future service only is taken into account in these illustrations, and State annuities on account of prior service would be additional to those outlined herein.

### Conclusion.

For the reasons above stated, it does not seem expedient to recommend [redacted] in the full percentages adopted by the Board on the [redacted] for the member's contributions. If the member makes contributions [redacted] of the full reductions throughout his service, he will receive [redacted] upon retirement, at the minimum superannuation age 60, [redacted] annuity. Thereafter, if retirement is deferred, the member's annuity will run ahead of the State annuity, as shown in Exhibit F. A similar condition exists if the member pays the full contributions up to age 60 and then discontinues making contributions. At the younger entry ages, the members' annuities will, under these conditions, run ahead of the State annuities.

If the member elects to pay only on the 5% deduction basis, then upon attaining the minimum superannuation retirement age, his member's annuity will be less than his State annuity. Whether or not, upon later

retirement, his member's annuity will run higher than his State annuity upon the age at which he enters the System, and he continues his 5% contributions. These points are shown in Exhibits H and I.

On the Basis for Determining the Required Appropriations of the Commonwealth for the Several Funds.

Under the provisions of the Retirement System, the Commonwealth appropriates funds for each biennium. These funds are required to provide, on a reserve basis, the State's share of the cost of the retirement allowances; that is, the State annuities to the members of the Retirement Association upon superannuation retirement.

The membership of the Retirement Association is divided into two groups, Original Members and New Members. The State makes separate appropriations for each class of members, because of the difference in the method of funding the State's share of the cost of the retirement allowances to such members.

State Annuity Reserve Account Number Two.

In the case of the Original Members, appropriations are made so that, on June 1st of each year, a payment is made into the Reserve Account maintained out of State funds for the benefit of the Original Members. This account is designated as "State Annuity Reserve Account Number Two".

The basis upon which the valuations are made, to determine the State's liability and its yearly contributions, is such that at the end of a 25-year period, the State's contributions would have met all accruing obligations against this fund up to that time, and there would be a sufficient balance left to take care of the State annuities in the future, without further appropriations.

The appropriation made for the current biennium, that is, for the period June 1, 1931, to May 31, 1933, was \$1,050,000, payable in two instalments; \$525,000 as of June 1, 1931, and \$525,000 as of June 1, 1932.

Contingent Reserve Account.

Appropriations of the Commonwealth to be applied towards maintaining, on a reserve basis, the Commonwealth's share of the cost of the retirement allowances for the new members, that is the State annuities, are credited to an account designated as the "Contingent Reserve Account".

In view of the fact that new employes are coming continuously into membership under the System, it becomes necessary for the Commonwealth's share of the cost of providing the State annuities for new members to be continuously provided for.

The new members will ultimately constitute the entire body of course, will be at a rather remote date. As a result, there has been developed, as noted hereinbefore, a plan of withdrawal from service has a bearing on the amount of the State's contributions. There has been a heavy withdrawal from service among the new members because the majority of them are young people, at the time of entering State service.

The appropriation made for the current biennium, that is, for the period June 1, 1931, to May 31, 1933, was \$690,000, payable in quarterly instalments of \$172,500 each: (1) as of July 1, 1931; (2) January 1, 1932; (3) July 1, 1932; (4) January 1, 1933.

There has been paid into the Contingent Reserve Account, during the biennium, \$345,000, and there are two instalments of \$172,500 each yet to be paid in.

#### Appropriation for Biennium 1933-1935.

The valuation of Assets and Liabilities, included in this report, is based upon the membership as of May 31, 1931. A revaluation of the Assets and Liabilities of the Retirement System, based upon the membership, as of the close of the current fiscal year, May 31, 1932, will be made, to be used as a basis for determining the amounts of the appropriations to be asked for by the Retirement Board from the Legislature of 1933.

Nevertheless, the results of the valuation show that it will not be necessary for the Retirement Board to ask for as large appropriations for the State Employees' Retirement System for the coming biennium, as were the appropriations granted for the current and past bienniums.

The studies which have been made in this evaluation show that many employees eligible for retirement are not availing themselves of the retirement allowances that would come to them from membership in the System.

Furthermore, many employees, withdrawing from the service of the Commonwealth, have withdrawn their accumulations in cash and thereby released the reserve accumulations, built up by the State, which would have been available to withdrawing employees had elected to take the annuity to which they have been entitled rather than to withdraw their savings. This may be attributed to the fact that many of the employees have not been acquainted with their rights under the Retirement Act, in connection with the information that has been given out by the Retirement Board. This, to the disadvantage of the employees, it reduces the cost to the State.

## HISTORY OF THE RETIREMENT SYSTEM

The Employees' Retirement System was established by the Act making the System operative as of January 1, 1924. Members of the Commonwealth, taking membership on or before December 31, 1924, were classed as Original Members. All entering the service of the State on and after January 1, 1925, have been classified as New Members.

The Act of March 29, 1927, opened the System to Original Members, who had not qualified for membership, provided they took membership prior to January 1, 1928, with the understanding that member's dues would be paid back to January 1, 1924. The establishing Act had allowed those eligible for original membership until June 1, 1925, to enter.

The Act of April 26, 1929, opened the System to judges, with the provision that judges taking office, or entering upon a new term on and after January 15, 1930, would be classed as New Members, unless they had previously qualified as Original Members in the case of service prior to that date. The System was again opened to Original Members, by Act, up to October 1, 1929.

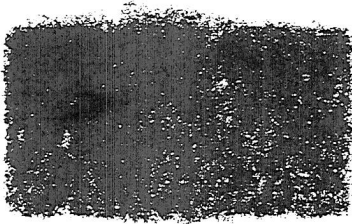
The Legislature of 1931 opened the System to employes paid out of State funds, such as the secretaries in judges' offices, though not appearing directly on the payroll. The System was then opened to Original Members for the balance of the year 1931.

## EMPLOYEES' RETIREMENT SYSTEMS IN OTHER STATES

In a recent survey of the operation of retirement systems for public employes other than teachers, it was shown that retirement systems were in operation in the following states: California, Colorado, Connecticut, Maine, Massachusetts, Minnesota, New Jersey and New York.

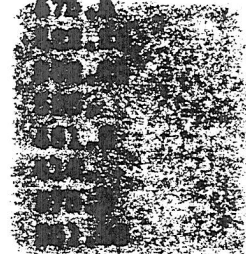
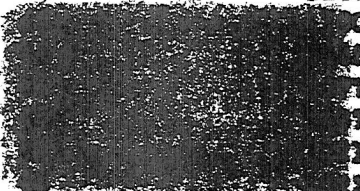
In some states, specified classes of employes are covered, such as members of the Supreme Court, employes of certain state institutions, such as schools and prisons. In several states, the question of establishing adequate contributory reserve retirement systems for state employes has been under consideration by legislatures, or legislative commissions, with a view to their establishment at an early date.

The Pennsylvania System is generally regarded as outstandingly well planned, and its provisions are carefully studied by those who are contemplating the establishment of retirement systems in other states.



LIVES EXPOSED TO RISK

Attained Age	Total Exposure	Attained Age	Total Exposure
15	18.5	53	841.5
16	72.5	54	818.25
17	226.5	55	803.25
18	588.75	56	764.
19	1173.5	57	742.
20	1705.	58	705.5
21	2005.75	59	672.5
22	2256.75	60	642.5
23	2448.75	61	615.5
24	2587.75	62	591.5
25	2270.25	63	570.5
26	2084.	64	552.5
27	1915.5	65	537.5
28	1769.	66	525.5
29	1654.	67	516.5
30	1602.	68	298.75
31	1523.25	69	271.25
32	1481.5	70	239.
33	1461.5	71	208.5
34	1390.5	72	183.75
35	1323.75	73	169.75
36	1284.25	74	159.5
37	1254.25	75	120.75
38	1222.5	76	95.25
39	1204.25	77	65.
40	1209.25	78	44.25
41	1213.	79	38.25
42	1179.75	80	35.
43	1135.	81	27.5
44	1090.5	82	23.25
45	1046.	83	14.75
46	1002.5	84	10.
47	960.5	85	8.5
48	921.25	86	5.25
49	883.25	87	5.
50	1071.25	88	3.75
51	1012.75	89	3.5
52	973.25	90	1.
	892.5	Total	<u>60,626.5</u>





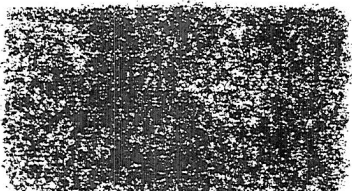
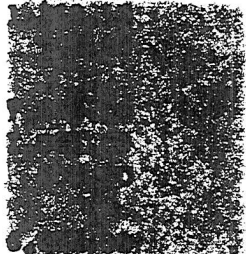


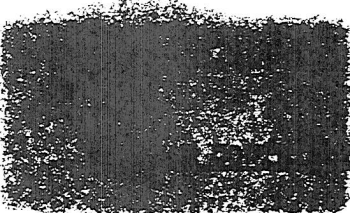
CONTRIBUTIONS TO RETIREMENT

Exhibit F

Income \$2,000 - Schedule II (1-100th)

Entry Age	Percentage of Salary Deduction	Amount of Deduction		AGE OF RETIREMENT		
				60	65	70
30	5.44	\$108.80	Accumulation	\$6,224.00	\$8,174.00	\$10,546.00
			Member's Annuity	599.44	928.44	1,456.83
			State Annuity	600.00	700.00	800.00
35	6.11	122.20	Accumulation	5,191.00	6,991.00	9,180.00
			Member's Annuity	499.95	794.07	
			State Annuity	500.00	600.00	
40	6.84	136.80	Accumulation	4,155.00	5,811.00	
			Member's Annuity	400.17	660.04	
			State Annuity	400.00	500.00	
45	7.63	152.60	Accumulation	3,117.00	4,635.00	
			Member's Annuity	300.20	526.47	895.43
			State Annuity	300.00	400.00	500.00
50	8.49	169.80	Accumulation	2,079.00	3,468.00	5,158.00
			Member's Annuity	200.23	393.91	712.53
			State Annuity	200.00	300.00	400.00
55	9.40	188.00	Accumulation	1,039.00	2,302.00	3,840.00
			Member's Annuity	100.07	261.47	530.46
			State Annuity	100.00	200.00	300.00



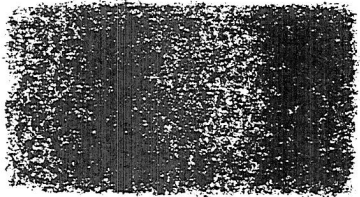
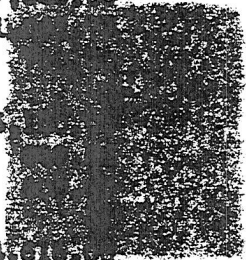


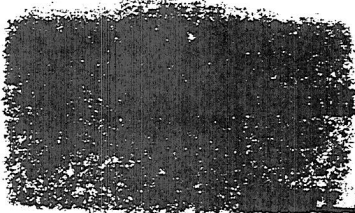
CONTRIBUTIONS TO AGE 60 - INTEREST ONLY THEREAFTER.

Exhibit A

Salary Basis \$2,000 - Schedule II (1-100th)

Entry Age	Percentage of Salary Deduction	Amount of Deduction		RETIREMENT		
				AGE 60	OP 65	70
30	5.44	\$108.80	Accumulation	\$6,224.00	\$7,572.00	\$9,213.00
			Member's Annuity	599.44	860.06	1,272.69
			State Annuity	600.00	700.00	800.00
35	6.11	122.20	Accumulation	5,191.00	6,317.00	7,686.00
			Member's Annuity	499.95	717.51	1,100.00
			State Annuity	500.00	600.00	700.00
40	6.84	136.80	Accumulation	4,155.00	5,085.00	6,210.00
			Member's Annuity	400.17	574.17	700.00
			State Annuity	400.00	500.00	600.00
45	7.63	152.60	Accumulation	3,117.00	3,793.00	4,616.00
			Member's Annuity	300.20	430.83	537.66
			State Annuity	300.00	400.00	500.00
50	8.49	169.80	Accumulation	2,079.00	2,530.00	3,077.00
			Member's Annuity	200.23	287.37	362.06
			State Annuity	200.00	300.00	400.00
55	9.40	188.00	Accumulation	1,039.00	1,265.00	1,540.00
			Member's Annuity	100.07	143.68	182.74
			State Annuity	100.00	200.00	300.00



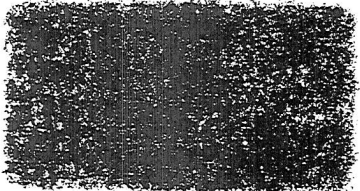


NOT LIMITED TO 5% - PAYMENTS TO RETIREMENT

Exhibit H

Contribution Basis \$2,000 - Schedule II (1-100%)

Entry Age	Percentage of Salary Deduction	Amount of Deduction		AGE	OF	RETIREMENT
				60	65	70
30	5.00	\$100.00	Accumulation	\$5,720.00	\$7,513.00	\$9,693.00
			Member's Annuity	550.90	853.36	1,339.00
			State Annuity	600.00	700.00	800.00
35	5.00	100.00	Accumulation	4,248.00	5,721.00	7,513.00
			Member's Annuity	509.13	649.82	1,037.85
			State Annuity	500.00	600.00	700.00
40	5.00	100.00	Accumulation	3,037.00	4,248.00	5,721.00
			Member's Annuity	292.50	482.51	700.00
			State Annuity	400.00	500.00	600.00
45	5.00	100.00	Accumulation	2,042.00	3,037.00	4,248.00
			Member's Annuity	196.67	344.96	500.00
			State Annuity	300.00	400.00	500.00
50	5.00	100.00	Accumulation	1,225.00	2,042.00	3,037.00
			Member's Annuity	117.98	231.94	419.53
			State Annuity	200.00	300.00	400.00
55	5.00	100.00	Accumulation	552.00	1,225.00	2,042.00
			Member's Annuity	53.16	139.14	282.08
			State Annuity	100.00	200.00	300.00



INTEREST TO 5% - PAYMENTS TO AGE 60 INTEREST ONLY THEREAFTER

Exhibit I

Salary Basis \$2,000 - Schedule II (1-100th)

Entry Age	Percentage of Salary Deduction	Amount of Deduction		AGE	OF	RETIREMENT
				60	65	70
30	5.00	\$100.00	Accumulation	\$5,720.00	\$6,959.00	\$8,466.00
			Member's Annuity	550.90	790.44	1,169.50
			State Annuity	600.00	700.00	800.00
35	5.00	100.00	Accumulation	4,248.00	5,169.00	6,290.00
			Member's Annuity	409.13	587.12	728.90
			State Annuity	500.00	600.00	700.00
40	5.00	100.00	Accumulation	3,037.00	3,694.00	4,547.00
			Member's Annuity	292.50	419.58	527.84
			State Annuity	400.00	500.00	600.00
45	5.00	100.00	Accumulation	2,042.00	2,485.00	3,067.00
			Member's Annuity	196.57	282.26	357.46
			State Annuity	300.00	400.00	500.00
50	5.00	100.00	Accumulation	1,225.00	1,490.00	1,813.00
			Member's Annuity	117.98	169.24	250.45
			State Annuity	200.00	300.00	400.00
55	5.00	100.00	Accumulation	552.00	672.00	817.00
			Member's Annuity	53.16	76.33	112.86
			State Annuity	100.00	200.00	300.00

