

TEACHERS RETIREMENT ASSOCIATION
STATE OF MINNESOTA

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MINNESOTA STATE
TEACHER'S RETIREMENT ASSOC.

REPORT OF ACTUARIAL VALUATION

JUNE 30, 1974

Teachers Retirement Association
State of Minnesota

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As requested by the Board of Trustees of the Fund, we have made an actuarial valuation of the Fund as of June 30, 1974, in accordance with the provisions of Minnesota Statutes, Section 356.21. The results of our analysis are presented in the following report.

Required Reserves for Annuities. Table 1 summarizes the census of annuities in force showing for each type of annuitant the number, annual amount and the present value of annuities. The present value was calculated using the 1971 Group Annuity Mortality Table for males set back 6 years with an interest assumption of 5%.

The required reserves for annuities shown in Table 1 are as follows:

Summary of Required Reserves for Annuities

Adjustable Fixed Benefit Fund	\$170,377.947.18
Variable Annuity Fund	6,943.51
Disability	2,960,032.14
1915 Law Annuities	248,753.66
Survivors Benefit	<u>1,398,661.40</u>
Total	\$174,992,337.89

Liability for Prior Service. Table 2 summarizes the census of active members and Table 3 the census of inactive members. These are shown separately for the Basic and Coordinated Group with each of these groups separated according to the benefit plan election in effect as of the date of this valuation. The accrued liability for prior service for each of these groups, exclusive of any participation in the Variable Annuity Fund, has been determined as follows:

Summary of Required Reserves For Prior Service

	<u>Basic</u>	<u>Coordinated</u>
<u>Active Members</u>		
Full Formula	\$239,000,886	\$401,437,104
Partial Formula	<u>36,785,431</u>	<u>105,411,529</u>
Total	\$275,786,317	\$506,848,633
<u>Inactive Members</u>		
Full Formula	\$ 43,911,850	\$ 53,143,296
Partial Formula	610,735	1,960,196
Full Variable	<u>-0-</u>	<u>314,171</u>
Total	\$ 44,522,585	\$ 55,417,663
Total Accrued prior service liability		\$882,575,198

Teachers Retirement Association
State of Minnesota

For members under a formula plan the accrued prior service liability has been determined using the entry age normal cost method. The assumed rates of death disability and withdrawal are shown in Table 4. It was assumed that individual salaries would increase at the rate of 3.5% each year. An interest assumption of 5% was used.

For inactive members under the full variable money purchase plan the accrued prior service liability has been determined to be represented by 180% of the members accumulation at June 30, 1957 plus 220% of the members accumulated fixed deposits with interest to the valuation date plus 300% of any unpaid arrears.

Unfunded Liabilities. The difference between the actuarial liabilities and the assets available for funding these liabilities is the actuarial deficit or unfunded liability. The following table compares these amounts as of June 30, last year and this year. The liability for benefits payable from the Adjustable Fixed Benefit Fund and the Variable Annuity Fund are for this purpose assumed to be equal to the participation in such fund included with the assets.

	<u>6-30-73</u>	<u>6-30-74</u>
(a) Participation in Adjustable Fixed Benefit Fund	\$111,344,946	\$ 170,491,708
(b) Participation in Variable Annuity Fund	12,184,961	21,009,642
(c) Required Reserve for Other Annuities	2,723,524	4,556,913
(d) Required Reserve for Prior Service	<u>751,481,653</u>	<u>882,575,198</u>
(e) Total Actuarial Liabilities	\$877,735,084	\$1,078,633,461
(f) Assets in excess of Current Liabilities	\$468,337,531	538,893,416
(g) Unfunded Liabilities	\$409,397,553	539,740,045
(h) Funding Ratio	53.4%	50.0%

During the year unfunded liabilities increased by \$130,342,492. An analysis of the causes of this increase are presented in the appendix to this report.

Normal Support Rate. Current statutes provide after July 1, 1975 for equal employer and employee contributions of 8% of salary for the Basic Group and 4% for the Coordinated Group. Prior to July 1, 1975 employer contributions are 7% and 3.5%. For members under a formula plan the aggregate entry age normal cost to provide retirement benefits was determined as follows:

	<u>Employer</u>	<u>Employee</u>	<u>Total</u>
Basic - Full Formula	7.66%	8.00%	15.66%
Partial Formula	7.00	8.00	15.00
Coordinated - Full Formula	4.18	4.00	8.18
Partial Formula	3.88	4.00	7.88

Teachers Retirement Association
State of Minnesota

These entry age normal cost rates were used in the determination of the accrued liability for members under a formula plan.

Additional Support Rate. An additional contribution of 2% of salary is provided by statute to amortize the actuarial deficit. After July 1, 1975 this additional contribution increases to 2.5% of salary. The following table shows for this year and last year the computations of the additional support rate required to amortize the actuarial deficit by June 30, 1997.

	<u>6-30-73</u>	<u>6-30-74</u>
(a) Unfunded Liability	\$409,397,553	\$539,740,045
(b) Annual Cost to Amortize by 1997	29,669,409	40,014,612
(c) Current Annual Payroll	583,341,059	598,421,409
(d) Additional Support Rate (b)/(c)	5.09%	6.69%

Interest at the rate of 5% on the current unfunded liability amounts to \$26,987,002 or 4.51% of the current annual payroll.

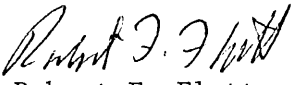
It is apparent that the additional support rate now provided by statute is inadequate. Legislative action should be sought to increase this rate to at least 5%.

Income From Investments. Income from investments earned during the year, and not allocated to the Adjustable Fixed Benefit Fund or Variable Annuity Fund, amounted to \$19,425,797. This represents a return of 5.77% on the mean assets in excess of current liabilities excluding participation in the Variable Fund and the Adjustable Fixed Benefit Fund. This includes recognized unrealized appreciation on stocks in the amount of \$2,481,761 and realized gains of \$745,320 on sale of investments. Interest at the rate of 5.50% was credited to members accumulated deposits.

Administrative Expense. The cost of administration of the Fund during the year amounted to \$573,499. This represents 0.10% of the current annual payroll.

Respectfully submitted,

BROWN AND FLOTT


Robert F. Flott

November 22, 1974

Teachers Retirement Association
State of Minnesota

TABLE 1

SUMMARY OF CENSUS OF ANNUITANTS

<u>Type of Annuity</u>	<u>Number</u>	<u>Annual Amount</u>	<u>Present Value</u>
<u>Annuities Payable from Adjustable Fixed Benefit Fund</u>			
<u>1. Service Retirement Annuitants</u>			
as of 6-30-73	4867	\$ 7,662,704.29	\$79,277,962.06
annuity increases	--	2,329,330.23	
granted during year	1141	4,934,785.44	
terminated by death	131	245,480.52	
expired	7	9,895.92	
cancelled	3	6,530.40	
as of 6-30-74	5867	\$14,664,913.12	\$158,805,024.68
<u>2. Beneficiaries of Deceased Members</u>			
as of 6-30-73	103	\$ 169,496.74	\$ 1,268,806.51
annuity increases	--	52,676.42	
granted during year	8	40,299.84	
expired	6	11,990.28	
as of 6-30-74	105	\$ 250,482.72	\$ 2,064,185.69
<u>3. Beneficiaries of Deceased Annuitants</u>			
as of 6-30-73	231	\$ 294,713.28	\$ 1,432,489.64
annuity increases	--	94,113.60	
transfer from type 1	45	97,450.44	
expired	12	13,802.76	
as of 6-30-74	264	\$ 472,474.56	\$ 2,305,071.15
<u>4. Section 136.82 Supplemental Annuities</u>			
as of 6-30-73	60	\$ 17,189.40	\$ 199,847.88
annuity increases	--	4,725.72	
granted during year	8	2,729.88	
as of 6-30-74	68	\$ 24,645.00	\$ 279,140.95
<u>5. Section 354.59 Allowances and 354.581 Increases</u>			
as of 6-30-73		\$ 673,802.52	\$ 5,506,951.65
annuity increases less expirations		198,588.96	
as of 6-30-74		\$ 872,391.48	\$ 6,924,524.71
<u>6. Sections 11.25, Subd. 12 and 354.55, Subd. 14 Increases</u>			
as of 6-30-73		\$ 1,553,141.52	\$ 15,043,580.30
transfer to types 1-5		1,553,141.52	15,043,580.30
as of 6-30-74		\$ 0	\$ 0
Total 6-30-73 MAFBF	5261	\$10,371,047.75	\$102,729,638.04
Total 6-30-74 MAFBF	6304	\$16,284,906.88	\$170,377,947.18

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<u>Type of Annuity</u>	<u>Number</u>	<u>Annual Amount</u>	<u>Present Value</u>
<u>Annuities Payable from Variable Annuity Fund</u>			
<u>7. Service Retirement Annuitants</u>			
as of 6-30-73	0	0	0
granted during year	4	510.72	6,943.51
as of 6-30-74	4	\$ 510.72	\$ 6,943.51
<u>Other Annuities and Benefits</u>			
<u>8. Disability Annuitants</u>			
as of 6-30-73	74	\$ 123,740.72	\$ 1,671,769.06
benefit increases	--	27,818.20	
granted during year	23	103,779.12	
terminated by death	5	17,781.24	
transfers to type 1	12	23,750.88	
as of 6-30-74	80	\$ 213,805.92	\$ 2,960,032.14
<u>9. Survivors Benefits</u>			
as of 6-30-73	162	\$ 112,620.00	\$ 882,274.86
benefit increases	--	27,855.00	
granted during year	18	30,750.00	
terminated	13	9,150.00	
as of 6-30-74	167	\$ 162,075.00	\$ 1,398,661.40
<u>10. 1915 Law Retirement Annuitants</u>			
as of 6-30-73	50	\$ 35,794.56	\$ 169,479.76
benefit increases	--	11,060.04	
terminated by death	4	3,296.88	
as of 6-30-74	46	\$ 43,557.72	\$ 198,219.98
<u>11. Section 354.44, Subd. 5 Increases</u>			
as of 6-30-73	--	\$ 12,000.00	\$ 57,106.08
terminated by death	--	960.00	
as of 6-30-74	--	\$ 11,040.00	\$ 50,533.68

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TABLE 2

SUMMARY OF CENSUS OF ACTIVE MEMBERS

	<u>BASIC GROUP</u>		<u>COORDINATED GROUP</u>	
	<u>Number</u>	<u>Annual Payroll</u>	<u>Number</u>	<u>Annual Payroll</u>
<u>Money Purchase - Full Variable</u>				
At 6-30-73			7,399	\$ 84,447,081
New Entrants			140	
Program Transfers			7,489	
To Inactive			7	
Separated with Refund			39	
Deaths			4	
At 6-30-74			-0-	-0-
<u>Full Formula</u>				
At 6-30-73	4,237	\$ 54,633,746	40,419	\$ 358,280,418
Adjustments	-0-		-0-	
New Entrants	41		7,295	
Program Transfers	-0-		-0-	
To Inactive	115		1,753	
Separation with Refund	79		3,644	
Deaths	18		71	
Disability Retirement	9		14	
Service Retirement	381		763	
At 6-30-74	3,594	\$ 48,676,883	41,469	\$372,691,047
<u>Partial Formula</u>				
At 6-30-73	738	\$ 11,294,019	6,493	\$ 74,685,795
No Status	4			
New Entrants	-0-		242	
Program Transfers	-0-		7,489	
To Inactive	11		257	
Separation with Refund	-0-		233	
Service Retirement	-0-		-0-	
At 6-30-74	731	\$ 11,543,287	13,734	\$165,510,192
Total at 6-30-73	4,975	\$ 65,927,765	54,311	\$517,413,294
Total at 6-30-74	4,325	\$ 60,220,170	55,203	\$538,201,239

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Teachers Retirement Association
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TABLE 3

SUMMARY OF CENSUS OF INACTIVE MEMBERS

	<u>Basic Group</u>	<u>Coordinated Group</u>
<hr/> Money Purchase - Full Variable <hr/>		
At 6-30-73		245
From Active		<u>7</u>
At 6-30-74		252
<hr/> Full Formula <hr/>		
At 6-30-73	1146	15,202
From Active	115	1,753
Separation with Refund	<u> </u>	<u>727</u>
At 6-30-74	1,261	16,228
<hr/> Partial Formula <hr/>		
At 6-30-73	4	120
From Active	11	257
Program Transfer	<u>-0-</u>	<u>-0-</u>
At 6-30-74	15	377
<hr/>		
Total at 6-30-73	1,150	15,567
Total at 6-30-74	1,276	16,857

Teachers Retirement Association
State of Minnesota

TABLE 4

ASSUMED RATES OF DECREMENT USED IN
VALUATION OF FORMULA PLAN BENEFITS

<u>Age</u>	<u>Death</u>	<u>Disability</u>	<u>Withdrawal</u>
20	.000530	.00076	.203
25	.000616	.00100	.168
30	.000758	.00112	.133
35	.000991	.00129	.098
40	.001374	.00164	.063
45	.002000	.00221	.028
50	.003580	.00347	.000
55	.006475	.00712	.000
60	.010436	.01264	.000

Assumed age at retirement - 62

Post Retirement Mortality - 1971 Group Annuity Mortality Table for males set back 6 years.

Teachers Retirement Association
State of Minnesota

APPENDIX TO VALUATION REPORT

ACTUARIAL ANALYSIS OF CHANGE IN UNFUNDED LIABILITIES

As indicated in the report of actuarial valuation, during the current year the unfunded liabilities of the Fund increased by \$130,342,492. Table 5 attached to this Appendix presents our determination of the required interest and difference between tabular and actual reserves released prepared for the following categories:

Employer Prior Service Liability
Disability Benefits
Widow's Benefits
Surviving Children's Benefits
1915 Law Annuities

1. As discussed in the valuation report income from investments not allocated to the Adjustable Fixed Benefit Fund or the Variable Annuity Fund amounted to \$19,425,797. Of this amount \$9,032,047 was allocated to members accounts leaving a balance of \$10,393,750. The amount of interest required as shown in Table 5 amounts to \$29,263,033. The actuarial deficit or unfunded liability increased by the difference of \$18,869,283.
2. For purposes of this analysis all employer contributions not allocated to the Variable Annuity Fund are considered to be available for funding the employer prior service liability. As shown in Table 5 actuarial costs amounting to \$1,409,752 or 0.24% of payroll were incurred on account of those benefits not paid from the Adjustable Fixed Benefit Fund. These were offset in part by \$350,551 interest forfeited when members received a refund of their deposits. The unfunded liability increased by the difference of \$1,059,201.
3. Administrative expenses not allocated to the Adjustable Fixed Benefit Fund or the Variable Annuity Fund amounted to \$541,231. The unfunded liability increased by this amount.
4. Benefit changes enacted by the 1974 Legislature increased the unfunded liability by \$38,529,753.
5. As indicated in Table 5, an actuarial loss of \$71,343,025 resulted in the employer prior service liability. The unfunded liability increased by this amount. This actuarial loss was a result of the following:
 - (a) Employer contributions, including the 2% additional contribution exceeded the required normal cost of current service by \$9,944,203. The unfunded liability decreased by this amount.
 - (b) An actuarial loss of \$81,287,228 resulted from the difference between actual experience and the assumptions used in the actuarial valuation. It is assumed that salaries increase at the rate of 3.5% per annum. In the last year the average projected future

Teachers Retirement Association
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benefit increased at a rate of 12.1%. The loss from this factor was offset by small actuarial gains resulting from teachers terminating and withdrawing deposits at a rate greater than expected, and from teachers remaining in service beyond the assumed retirement age of 62.

6. Adjustable Fixed Benefit Fund

During the year the excess of participation over required reserves in this fund decreased by \$8,501,547.24 from \$8,615,307.87 to \$113,760.63. The causes of this decrease have been determined as follows:

a. Excess investment earnings	\$ 274,019.00
b. Mortality gain	274,763.07
c. Section 11.25 Subd. 16 transfer	2,549,292.09
d. Value of 12.93% increase at 1-1-74	-11,589,622.00
e. Administrative expenses	<u>- 10,000.00</u>
Net decrease	\$ 8,501,547.24

Investment earnings averaged 5.05% on the mean participation. A return of 5% was assumed during the year.

During the year 131 annuitants died whereas 128 deaths were expected according to the valuation mortality basis assumed.

The mortality gain, calculated in accordance with Section 11.25 Subd. 12(e) was \$193,777.71. This amount should be transferred from the Adjustable Fixed Benefit Fund to the Teachers Retirement Fund.

Teachers Retirement Association
State of Minnesota

Table 5

CALCULATION OF REQUIRED INTEREST AND DIFFERENCE BETWEEN TABULAR
AND ACTUAL RESERVES RELEASED

	<u>Employer Prior Service</u>	<u>1915 Law Retirement Annuities</u>	<u>Disability Annuities</u>	<u>Widow's Annuities</u>	<u>Surviving Children's Annuities</u>
(1) Liability 6-3-74	\$690,138,472	\$198,220	\$2,960,032	\$1,162,448	\$236,214
(2) Payments Incurred	54,645,269	50,867	186,548	67,854	75,190
(3) Liability 6-30-73	575,118,206	169,480	1,671,769	676,526	205,749
(4) Credit Applied	31,322,354	11,467	-0-	-0-	-0-
(5) Value of Benefit increase	<u>37,880,311</u>	<u>51,349</u>	<u>380,480</u>	<u>168,968</u>	<u>48,645</u>
(6) T-A=1 (1)=(2)-(3)-(4)-(5)	100,462,870	16,791	1,094,331	384,808	57,010
(7) Required Interest .025 (1)=(3)-(6)	<u>29,119,845</u>	<u>8,773</u>	<u>88,437</u>	<u>36,354</u>	<u>9,624</u>
(8) Tabular Less Actual Reserves Released (6)-(7)	\$ 71,343,025	\$ 8,018	\$1,005,894	\$ 348,454	\$ 47,386

TEACHERS RETIREMENT ASSOCIATION
JUNE 30, 1974 FINANCIAL REPORT

A. Assets

Deposits in banks.....	\$ 346,980.19
Accounts Receivable:	
Accrued members' contributions.....	3,231,139.62
Accrued employer's contributions.....	8,068,140.01
Employer's social security receivable.....	7,065,103.26
Minnesota Variable Annuity Fund.....	32,109.07
Proceeds from sale of investments.....	286,411.10
Social Security Retirement Division.....	827.85
Interest charges on late remittances.....	4,565.67
Other.....	2,678.00
Accrued interest on investments.....	2,499,069.81
Dividends on stocks, declared but not yet received.....	77,596.14
Investment in bonds at amortized cost.....	148,560,836.35
Investment in preferred and common stocks at cost.....	155,067,939.27
Short term investments.....	15,484,057.32
Deferred Yield Adjustment Account.....	4,028,151.51
Recognized unrealized appreciation in stocks.....	6,176,850.81
Participation in Minnesota Adjustable Fixed Benefit Fund.....	170,491,707.81
Participation in Minnesota Variable Annuity Fund.....	21,009,641.77
Equipment at cost, less depreciation.....	16,357.43
Total Assets.....	<u>\$542,450,162.99</u>

B. Unfunded Accrued Liability..... \$539,740,045.34

C. Accumulated Members' Contributions Without Interest

Regular TRA.....	\$147,810,852.69
Variable Annuity Fund (includes Earnings).....	10,358,516.44
Total.....	<u>\$158,169,369.13</u>

D. Current Liabilities

Accounts Payable:	
Annuity payments.....	\$ 1,251,009.77
Accrued expenses.....	81,264.48
Purchase of investments in process.....	879,599.65
Minnesota Adjustable Fixed Benefit Fund.....	1,342,515.03
Other.....	2,358.30
Total Current Liabilities.....	<u>\$ 3,556,747.23</u>

E. Total Reserves Required as Per Attached Schedule..... \$1,078,633,461.10

Teachers Retirement Association
State of Minnesota

SCHEDULE OF TOTAL RESERVES REQUIRED JUNE 30, 1974

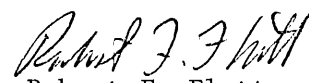
1. <u>For Adjustable Fixed Benefit Fund Participants</u>	\$170,491,707.81
2. <u>For Variable Annuity Fund Participants</u>	21,009,641.77
3. <u>For Active Members</u>	782,634,950.00
4. <u>For Inactive Members</u>	99,940,248.00
5. <u>For Other Annuitants</u>	
a. 1915 Law Retirement Annuities	198,219.98
b. Disability Annuities	2,960,032.14
c. Widow's Annuities	1,162,447.88
d. Surviving Children's Annuities	<u>236,213.52</u>
Total	<u>\$ 4,556,913.52</u>
Total Required Reserves	\$1,078,633,461.10

Certification

The above exhibit has been prepared in accordance with the provisions of Section 356.20. The required reserves for formula benefits have been computed in accordance with the entry age normal cost method.

Respectfully submitted,

BROWN AND FLOTT


Robert F. Flott

November 21, 1974

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Coordinated - Full Formula	4.18	4.00	8.18
Partial Formula	3.88	4.00	7.88

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State of Minnesota

These entry age normal cost rates were used in the determination of the accrued liability for members under a formula plan.

Additional Support Rate. An additional contribution of 2% of salary is provided by statute to amortize the actuarial deficit. After July 1, 1975 this additional contribution increases to 2.5% of salary. The following table shows for this year and last year the computations of the additional support rate required to amortize the actuarial deficit by June 30, 1997.

	<u>6-30-73</u>	<u>6-30-74</u>
(a) Unfunded Liability	\$409,397,553	\$539,740,045
(b) Annual Cost to Amortize by 1997	29,669,409	40,014,612
(c) Current Annual Payroll	583,341,059	598,421,409
(d) Additional Support Rate (b)/(c)	5.09%	6.69%

Interest at the rate of 5% on the current unfunded liability amounts to \$26,987,002 or 4.51% of the current annual payroll.

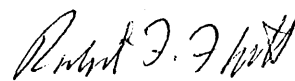
It is apparent that the additional support rate now provided by statute is inadequate. Legislative action should be sought to increase this rate to at least 5%.

Income From Investments. Income from investments earned during the year, and not allocated to the Adjustable Fixed Benefit Fund or Variable Annuity Fund, amounted to \$19,425,797. This represents a return of 5.77% on the mean assets in excess of current liabilities excluding participation in the Variable Fund and the Adjustable Fixed Benefit Fund. This includes recognized unrealized appreciation on stocks in the amount of \$2,481,761 and realized gains of \$745,320 on sale of investments. Interest at the rate of 5.50% was credited to members accumulated deposits.

Administrative Expense. The cost of administration of the Fund during the year amounted to \$573,499. This represents 0.10% of the current annual payroll.

Respectfully submitted,

BROWN AND FLOTT


Robert F. Flott

November 22, 1974

Teachers Retirement Association
State of Minnesota

TABLE 1

SUMMARY OF CENSUS OF ANNUITANTS

<u>Type of Annuity</u>	<u>Number</u>	<u>Annual Amount</u>	<u>Present Value</u>
<u>Annuities Payable from Adjustable Fixed Benefit Fund</u>			
<u>1. Service Retirement Annuitants</u>			
as of 6-30-73	4867	\$ 7,662,704.29	\$79,277,962.06
annuity increases	--	2,329,330.23	
granted during year	1141	4,934,785.44	
terminated by death	131	245,480.52	
expired	7	9,895.92	
cancelled	3	6,530.40	
as of 6-30-74	5867	\$14,664,913.12	\$158,805,024.68
<u>2. Beneficiaries of Deceased Members</u>			
as of 6-30-73	103	\$ 169,496.74	\$ 1,268,806.51
annuity increases	--	52,676.42	
granted during year	8	40,299.84	
expired	6	11,990.28	
as of 6-30-74	105	\$ 250,482.72	\$ 2,064,185.69
<u>3. Beneficiaries of Deceased Annuitants</u>			
as of 6-30-73	231	\$ 294,713.28	\$ 1,432,489.64
annuity increases	--	94,113.60	
transfer from type 1	45	97,450.44	
expired	12	13,802.76	
as of 6-30-74	264	\$ 472,474.56	\$ 2,305,071.15
<u>4. Section 136.82 Supplemental Annuities</u>			
as of 6-30-73	60	\$ 17,189.40	\$ 199,847.88
annuity increases	--	4,725.72	
granted during year	8	2,729.88	
as of 6-30-74	68	\$ 24,645.00	\$ 279,140.95
<u>5. Section 354.59 Allowances and 354.581 Increases</u>			
as of 6-30-73		\$ 673,802.52	\$ 5,506,951.65
annuity increases less expirations		198,588.96	
as of 6-30-74		\$ 872,391.48	\$ 6,924,524.71
<u>6. Sections 11.25, Subd. 12 and 354.55, Subd. 14 Increases</u>			
as of 6-30-73		\$ 1,553,141.52	\$ 15,043,580.30
transfer to types 1-5		1,553,141.52	15,043,580.30
as of 6-30-74		\$ 0	\$ 0
Total 6-30-73 MAFBF	5261	\$10,371,047.75	\$102,729,638.04
Total 6-30-74 MAFBF	6304	\$16,284,906.88	\$170,377,947.18

Teachers Retirement Association
State of Minnesota

<u>Type of Annuity</u>	<u>Number</u>	<u>Annual Amount</u>	<u>Present Value</u>
<u>Annuities Payable from Variable Annuity Fund</u>			
<u>7. Service Retirement Annuitants</u>			
as of 6-30-73	0	0	0
granted during year	4	510.72	6,943.51
as of 6-30-74	4	\$ 510.72	\$ 6,943.51
<u>Other Annuities and Benefits</u>			
<u>8. Disability Annuitants</u>			
as of 6-30-73	74	\$ 123,740.72	\$ 1,671,769.06
benefit increases	--	27,818.20	
granted during year	23	103,779.12	
terminated by death	5	17,781.24	
transfers to type 1	12	23,750.88	
as of 6-30-74	80	\$ 213,805.92	\$ 2,960,032.14
<u>9. Survivors Benefits</u>			
as of 6-30-73	162	\$ 112,620.00	\$ 882,274.86
benefit increases	--	27,855.00	
granted during year	18	30,750.00	
terminated	13	9,150.00	
as of 6-30-74	167	\$ 162,075.00	\$ 1,398,661.40
<u>10. 1915 Law Retirement Annuitants</u>			
as of 6-30-73	50	\$ 35,794.56	\$ 169,479.76
benefit increases	--	11,060.04	
terminated by death	4	3,296.88	
as of 6-30-74	46	\$ 43,557.72	\$ 198,219.98
<u>11. Section 354.44, Subd. 5 Increases</u>			
as of 6-30-73	--	\$ 12,000.00	\$ 57,106.08
terminated by death	--	960.00	
as of 6-30-74	--	\$ 11,040.00	\$ 50,533.68

Teachers Retirement Association
State of Minnesota

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TABLE 2

SUMMARY OF CENSUS OF ACTIVE MEMBERS

	<u>BASIC GROUP</u>		<u>COORDINATED GROUP</u>	
	<u>Number</u>	<u>Annual Payroll</u>	<u>Number</u>	<u>Annual Payroll</u>
<u>Money Purchase - Full Variable</u>				
At 6-30-73			7,399	\$ 84,447,081
New Entrants			140	
Program Transfers			7,489	
To Inactive			7	
Separated with Refund			39	
Deaths			4	
At 6-30-74			-0-	-0-
<u>Full Formula</u>				
At 6-30-73	4,237	\$ 54,633,746	40,419	\$ 358,280,418
Adjustments	-0-		-0-	
New Entrants	41		7,295	
Program Transfers	-0-		-0-	
To Inactive	115		1,753	
Separation with Refund	79		3,644	
Deaths	18		71	
Disability Retirement	9		14	
Service Retirement	381		763	
At 6-30-74	3,594	\$ 48,676,883	41,469	\$372,691,047
<u>Partial Formula</u>				
At 6-30-73	738	\$ 11,294,019	6,493	\$ 74,685,795
No Status	4			
New Entrants	-0-		242	
Program Transfers	-0-		7,489	
To Inactive	11		257	
Separation with Refund	-0-		233	
Service Retirement	-0-		-0-	
At 6-30-74	731	\$ 11,543,287	13,734	\$165,510,192
Total at 6-30-73	4,975	\$ 65,927,765	54,311	\$517,413,294
Total at 6-30-74	4,325	\$ 60,220,170	55,203	\$538,201,239

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SUMMARY OF CENSUS OF INACTIVE MEMBERS

BROWN AND FLOTT

Teachers Retirement Association
State of Minnesota

TABLE 4

ASSUMED RATES OF DECREMENT USED IN
 VALUATION OF FORMULA PLAN BENEFITS

<u>Age</u>	<u>Death</u>	<u>Disability</u>	<u>Withdrawal</u>
20	.000530	.00076	.203
25	.000616	.00100	.168
30	.000758	.00112	.133
35	.000991	.00129	.098
40	.001374	.00164	.063
45	.002000	.00221	.028
50	.003580	.00347	.000
55	.006475	.00712	.000
60	.010436	.01264	.000

Assumed age at retirement - 62

Post Retirement Mortality - 1971 Group Annuity Mortality Table for
 males set back 6 years.

Teachers Retirement Association
State of Minnesota

APPENDIX TO VALUATION REPORT

ACTUARIAL ANALYSIS OF CHANGE IN UNFUNDED LIABILITIES

As indicated in the report of actuarial valuation, during the current year the unfunded liabilities of the Fund increased by \$130,342,492. Table 5 attached to this Appendix presents our determination of the required interest and difference between tabular and actual reserves released prepared for the following categories:

Employer Prior Service Liability
Disability Benefits
Widow's Benefits
Surviving Children's Benefits
1915 Law Annuities

1. As discussed in the valuation report income from investments not allocated to the Adjustable Fixed Benefit Fund or the Variable Annuity Fund amounted to \$19,425,797. Of this amount \$9,032,047 was allocated to members accounts leaving a balance of \$10,393,750. The amount of interest required as shown in Table 5 amounts to \$29,263,033. The actuarial deficit or unfunded liability increased by the difference of \$18,869,283.
2. For purposes of this analysis all employer contributions not allocated to the Variable Annuity Fund are considered to be available for funding the employer prior service liability. As shown in Table 5 actuarial costs amounting to \$1,409,752 or 0.24% of payroll were incurred on account of those benefits not paid from the Adjustable Fixed Benefit Fund. These were offset in part by \$350,551 interest forfeited when members received a refund of their deposits. The unfunded liability increased by the difference of \$1,059,201.
3. Administrative expenses not allocated to the Adjustable Fixed Benefit Fund or the Variable Annuity Fund amounted to \$541,231. The unfunded liability increased by this amount.
4. Benefit changes enacted by the 1974 Legislature increased the unfunded liability by \$38,529,753.
5. As indicated in Table 5, an actuarial loss of \$71,343,025 resulted in the employer prior service liability. The unfunded liability increased by this amount. This actuarial loss was a result of the following:
 - (a) Employer contributions, including the 2% additional contribution exceeded the required normal cost of current service by \$9,944,203. The unfunded liability decreased by this amount.
 - (b) An actuarial loss of \$81,287,228 resulted from the difference between actual experience and the assumptions used in the actuarial valuation. It is assumed that salaries increase at the rate of 3.5% per annum. In the last year the average projected future

Teachers Retirement Association
State of Minnesota

benefit increased at a rate of 12.1%. The loss from this factor was offset by small actuarial gains resulting from teachers terminating and withdrawing deposits at a rate greater than expected, and from teachers remaining in service beyond the assumed retirement age of 62.

6. Adjustable Fixed Benefit Fund

During the year the excess of participation over required reserves in this fund decreased by \$8,501,547.24 from \$8,615,307.87 to \$113,760.63. The causes of this decrease have been determined as follows:

a. Excess investment earnings	\$ 274,019.00
b. Mortality gain	274,763.07
c. Section 11.25 Subd. 16 transfer	2,549,292.09
d. Value of 12.93% increase at 1-1-74	-11,589,622.00
e. Administrative expenses	<u>- 10,000.00</u>
Net decrease	\$ 8,501,547.24

Investment earnings averaged 5.05% on the mean participation. A return of 5% was assumed during the year.

During the year 131 annuitants died whereas 128 deaths were expected according to the valuation mortality basis assumed.

The mortality gain, calculated in accordance with Section 11.25 Subd. 12(e) was \$193,777.71. This amount should be transferred from the Adjustable Fixed Benefit Fund to the Teachers Retirement Fund.

Teachers Retirement Association
State of Minnesota

Table 5

CALCULATION OF REQUIRED INTEREST AND DIFFERENCE BETWEEN TABULAR
AND ACTUAL RESERVES RELEASED

	<u>Employer Prior Service</u>	<u>1915 Law Retirement Annuities</u>	<u>Disability Annuities</u>	<u>Widow's Annuities</u>	<u>Surviving Children's Annuities</u>
(1) Liability 6-3-74	\$690,138,472	\$198,220	\$2,960,032	\$1,162,448	\$236,214
(2) Payments Incurred	54,645,269	50,867	186,548	67,854	75,190
(3) Liability 6-30-73	575,118,206	169,480	1,671,769	676,526	205,749
(4) Credit Applied	31,322,354	11,467	-0-	-0-	-0-
(5) Value of Benefit increase	<u>37,880,311</u>	<u>51,349</u>	<u>380,480</u>	<u>168,968</u>	<u>48,645</u>
(6) T-A=1 (1)=(2)-(3)-(4)-(5)	100,462,870	16,791	1,094,331	384,808	57,010
(7) Required Interest .025 (1)=(3)-(6)	<u>29,119,845</u>	<u>8,773</u>	<u>88,437</u>	<u>36,354</u>	<u>9,624</u>
(8) Tabular Less Actual Reserves Released (6)-(7)	\$ 71,343,025	\$ 8,018	\$1,005,894	\$ 348,454	\$ 47,386

TEACHERS RETIREMENT ASSOCIATION
JUNE 30, 1974 FINANCIAL REPORT

A. Assets

Deposits in banks.....	\$ 346,980.19
Accounts Receivable:	
Accrued members' contributions.....	3,231,139.62
Accrued employer's contributions.....	8,068,140.01
Employer's social security receivable.....	7,065,103.26
Minnesota Variable Annuity Fund.....	32,109.07
Proceeds from sale of investments.....	286,411.10
Social Security Retirement Division.....	827.85
Interest charges on late remittances.....	4,565.67
Other.....	2,678.00
Accrued interest on investments.....	2,499,069.81
Dividends on stocks, declared but not yet received.....	77,596.14
Investment in bonds at amortized cost.....	148,560,836.35
Investment in preferred and common stocks at cost.....	155,067,939.27
Short term investments.....	15,484,057.32
Deferred Yield Adjustment Account.....	4,028,151.51
Recognized unrealized appreciation in stocks.....	6,176,850.81
Participation in Minnesota Adjustable Fixed Benefit Fund.....	170,491,707.81
Participation in Minnesota Variable Annuity Fund.....	21,009,641.77
Equipment at cost, less depreciation.....	16,357.43
Total Assets.....	<u>\$542,450,162.99</u>

B. Unfunded Accrued Liability..... \$539,740,045.34

C. Accumulated Members' Contributions Without Interest

Regular TRA.....	\$147,810,852.69
Variable Annuity Fund (includes Earnings).....	10,358,516.44
Total.....	<u>\$158,169,369.13</u>

D. Current Liabilities

Accounts Payable:	
Annuity payments.....	\$ 1,251,009.77
Accrued expenses.....	81,264.48
Purchase of investments in process.....	879,599.65
Minnesota Adjustable Fixed Benefit Fund.....	1,342,515.03
Other.....	2,358.30
Total Current Liabilities.....	<u>\$ 3,556,747.23</u>

E. Total Reserves Required as Per Attached Schedule..... \$1,078,633,461.10

Teachers Retirement Association
State of Minnesota

SCHEDULE OF TOTAL RESERVES REQUIRED JUNE 30, 1974

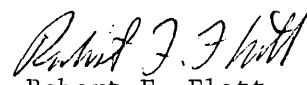
1. <u>For Adjustable Fixed Benefit Fund Participants</u>	\$170,491,707.81
2. <u>For Variable Annuity Fund Participants</u>	21,009,641.77
3. <u>For Active Members</u>	782,634,950.00
4. <u>For Inactive Members</u>	99,940,248.00
5. <u>For Other Annuitants</u>	
a. 1915 Law Retirement Annuities	198,219.98
b. Disability Annuities	2,960,032.14
c. Widow's Annuities	1,162,447.88
d. Surviving Children's Annuities	<u>236,213.52</u>
Total	<u>\$ 4,556,913.52</u>
Total Required Reserves	\$1,078,633,461.10

Certification

The above exhibit has been prepared in accordance with the provisions of Section 356.20. The required reserves for formula benefits have been computed in accordance with the entry age normal cost method.

Respectfully submitted,

BROWN AND FLOTT


Robert F. Flott

November 21, 1974



**STATE OF MINNESOTA
TEACHERS RETIREMENT ASSOCIATION**

302 CAPITOL SQUARE BUILDING
550 CEDAR STREET - ST. PAUL 55101
TELEPHONE: (612) 296-3311

November 27, 1974

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Mr. Edward A. Burdick
Chief Clerk
House of Representatives
Capitol
St. Paul, MN 55155

Dear Mr. Burdick:

In accordance with Minnesota Statutes, Section 356.21, enclosed are two copies of the Teachers Retirement Association's valuation as of June 30, 1974.

Sincerely,

Harvey W. Schmidt
Harvey W. Schmidt
Executive Secretary

HWS:jr
Encls.