ACTUARIAL REPORT

EMPLOYEES' RETIREMENT ASSOCIATION

of the

COUNTY OF FRESNO

Made to the Board of Retirement

as of June 30, 1962

COATES, HERFURTH & ENGLAND, CONSULTING ACTUARIES

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May 31, 1963

Board of Retirement County Employees' Retirement Association Fresno County P.O. Box 747 Fresno, California

Gentlemen:

We are pleased to transmit herewith our report setting forth the results of the investigation and valuation of your Retirement System as of June 30, 1962.

Both the investigation and valuation as of June 30, 1962, were based upon financial statements and employee data furnished by the Retirement Office.

This report duscusses in detail the results and the conclusions arising from our investigation and valuation.

At this time, we wish to take the opportunity to express our appreciation for the cooperation given us by the Retirement Office during our work.

Respectfully submitted,

COATES, HERFURTH & ENGLAND Consulting Actuaries

By

RDD:dbd

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ACTUARIAL REPORT

COUNTY EMPLOYEES' RETIREMENT ASSOCIATION

COUNTY OF FRESNO

as of

JUNE 30, 1962

SECTION I

Section 31453 of the County Employees' Retirement Law of 1937

provides as follows:

"An actuarial valuation shall be made within one year after the date on which any system established under this Chapter becomes effective, and thereafter at not to exceed five year intervals. The valuation shall be conducted under the supervision of an actuary and shall cover the mortality, service, and compensation experience of the members and beneficiaries, and shall evaluate the assets and liabilities of the retirement fund. On the basis of the investigation, valuation, and recommendation of the actuary, the Board of Retirement shall recommend to the Board of Supervisors such changes in the rate of interest, in the rates of contribution of members and in County and district appropriations as are necessary. No adjustment shall be included in the new rates for time prior to the effective date of the revision."

In accordance with the foregoing provisions of the Law, we have completed an investigation into the mortality, service and compensation experience of members and beneficiaries under the System during the five-year period which has elapsed, since the last investigation, as of

Page 1.

June 30, 1957. Based upon the assumptions derived from this investigation and the rate of interest which has been assumed, we have also completed an actuarial valuation of the assets and liabilities of the System as of June 30, 1962.

The members' rates of contribution make up the first element to be determined in the valuation of the System. These rates are dependent upon the interest assumptions, the compensation experience among active members and the mortality expected among members retired for service.

After these rates of contribution have been determined, an actuarial valuation must then be made of that portion of the total liabilities of the System which is not funded by member contributions and funds on hand. In this way the total net liability falling against the County is determined. As in the last report, we have assembled this report in sections, dealing with the following: the data upon which the actuarial survey was based; the determination of member contributions; the valuation of the assets and liabilities of the System, and finally our recommendations of the contributions that should be made by the County.

SECTION II.

DATA FURNISHED

The Retirement Office furnished us with the following informa-

tion regarding the membership and experience under the System.

For each member of the System who was active on June 30, 1962,

the following:

- 1. Name or number
- 2. Department
- 3. Group (whether or not covered under OASDI)
- 4. Sex
- 5. Date of birth
- 6. Age of membership
- 7. Rate of contribution
- 8. Date of employment
- 9. Years of prior service
- 10. Monthly compensation earnable
- 11. Accumulated contributions

For each person receiving an allowance from the System as of

June 30, 1962, we were furnished the following:

- 1. Name
- 2. Sex
- 3. Date of birth
- 4. Date of retirement
- 5. Type of retirement
- 6. Option selected
- 7. Monthly annuity
- 8. Monthly current service pension
- 9. Monthly prior service pension
- 10. Beneficiary sex and date of birth

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In addition to the above information on current active and retired members, we were given similar information concerning any active member of the System who had terminated for any reason between July 1, 1957, and June 30, 1962. Similar information was furnished regarding the retired persons who had died during the five-year period.

In addition to the above-mentioned personnel statistics, the Retirement Board furnished us with a financial statement and balance sheet of the retirement fund as of June 30, 1962. No physical audit of these assets was made by us and our calculations are based upon the balance sheet as submitted.

SECTION III

MEMBER CONTRIBUTIONS

The 1937 County Law sets forth the basis of determining the normal rates of contribution for members in Section 31621 of Article 6, which reads as follows:

> "The normal rates of contribution except for members covered by Article 6.8 shall be such as will provide an average annuity at age 60 equal to 1/120th of the final compensation of members not covered by Article 6.8, according to the tables adopted by the board of supervisors, for each year of service rendered after entering the system."

In addition, for members covered under Article 13,

Integration with Old Age and Survivors Insurance, Section 31812

of the Law also applies. This section reads as follows:

"Each member shall continue to contribute as provided for in Article 6 of this chapter less an amount equal to one-third of that portion of such contribution which is payable with respect to the first three hundred fifty dollars (\$350.00) monthly wage."

Section 31620 of the County Law further provides that the contribution rates of members shall be based upon sex and upon the age at the nearest birthday at the time of entrance into the Retirement System. Section 31453 provides for the adjustment in such rates of contribution in the light of changes in the rate of interest and the other factors. It further provides that no adjustment shall be included

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in the new rates for time prior to the effective date of the revision.

In order to determine the rates of contribution in accordance with the above provisions of the Law, it is first necessary to adopt assumptions for the following three elements which enter into the calculations:

- The interest rate that may be realized on the investments of the funds of the System.
- 2. The relative average increases anticipated in the salary of the members as they advance in age to retirement.
- 3. The mortality to be experienced among members retired for service under the System.

The above three factors and the assumptions made in regard to each of them will be discussed in the following paragraphs.

Interest Rate

The last actuarial valuation was made on the basis of a longterm interest assumption of 3% per annum. This assumption was justifiable based upon the average earnings of the fund at that time. Since then, however, current investments have been made at improved yields, and a majority of the retirement funds are now earning in excess of 3-1/2%. Many of the counties operating under the 1937 Act have already adopted a 3-1/2% assumption. Considering these facts, we believe it is more realistic to recognize these higher earnings and we were informed that the Retirement Board shares this view. We, therefore, have assumed an

interest rate of 3-1/2% compounded annually for the valuation of the prospective assets and liabilities of the fund.

Mortality After Service Retirement

At the time of the valuation, there were relatively few persons receiving allowances from the System on account of service retirement. Because the group was not large, it could not be expected to provide a reliable test of the mortality experience over the five year period since the last investigation. Nevertheless, during this period, 44 deaths actually occurred, and approximately 43 were anticipated by the mortality table now being used. In order to obtain a more reliable test, however, we had available the experience among several other counties operating under the 1937 Act, and after a study of this additional experience along with that of Fresno County, it was our opinion that there should be a change to a more modern table.

The 1946 Service Pensioner Mortality Table has been used as the basic table for the mortality after service retirement for your System since 1952, with periodic age set backs as mortality has improved. Based upon the experience among the several counties mentioned above, we believe that a newer basic mortality table should be adopted now in order to reflect the lighter mortality generally being experienced. The use of this new mortality table will also provide for some slight improvement in mortality should this occur in the future. Accordingly, we recommend that the 1951

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Group Annuity Mortality Table be adopted as a basis for the mortality after service retirement assumption. The rates of mortality for this table for both males and females are included in the schedules in Section VI of this report.

Salary Scales

For the purpose of calculating member contribution rates, as well as for the valuation of benefits that are based upon final compensation, it was necessary to prepare salary scales to measure the relative increases in salaries that members might experience as they advance in age toward retirement. Based upon studies of the data that were supplied us, the average current salary at each age was determined for males and females separately. From this information salary scales were developed to express the ratio of present compensation to expected final compensation. In considering the salary scales, it should be noted that the fundamental assumption is made that on the average, as members advance in age, normal increases in compensation would be in accordance with the rates indicated by the scales. These salary scales do not attempt to predict changes in the general level of compensation which would be due to changing economic conditions. They are used in the valuation only to indicate the average relationship existing between compensation at different ages in accordance with present salary levels.

Member Contribution Rates

Because of the change in the interest assumption from 3% to 3-1/2% per annum, the change in the assumption as to mortality after service retirement to a stronger basis to provide for lighter mortality and a change in the salary scales for developing employee rates, we calculated new normal rates for members. The net effect of the above changes in assumptions resulted in some small decreases in the member rates for certain ages. These decreases are so slight that we recommend that the present employee rates be continued.

The above recommendation has been motivated by two main reasons. First, we question whether the actual cost of physically making these small changes in employee rates would be warranted. Second, we feel that these small reductions in rates could easily be offset by any inflationary trend.

For the reasons discussed above, we have recommended that the present member rates of contribution be continued. Complete schedules of these rates are shown on the following pages. Members still under the Money Purchase System will use rates of contribution listed under the column labeled "Excess of Monthly Compensation over \$350." In our opinion, these rates comply with the provisions of Sections 31621 and 31812 of the Law.

FRESNO COUNTY

Contribution Rates of Members

Percentage of Compensation by Entry Age

	MA	MALE		FEMALE		
Age	lst \$350	Excess	lst \$350	Excess		
16	. 3.93%	5.89%	4.33%	6.50%		
17	3.96	5.94	4.38	6.57		
18	3.99	5.99	4.43	6.64		
19	4.03	6.04	4.47	6.71		
20	4.06	6.09	4.52	6.78		
21	4.09	6.14	4.57	6.85		
22	4.13	6.20	4.62	6.93		
23	4.17	6.26	4.67	7.01		
24	4.21	6.32	4.73	7.09		
25	4.25	6.38	4.78	7.17		
26	. 4.30	6.45	4.84	7.26		
27	4.35	6.52	4.90	7.35		
28	4.39	6.59 -	4.96	7.44		
29	4.44	6.66	5.03	7.54		
30	4.49	6.74	5.09	7.64		
31	4.55	6.82	5.16	7.74		
32	4.60	6.90	5.23	7.85		
33	4.65	6.98	5.31	7.96		
34	4.71	7.07	• 5.38	8.07		
35	4.77	7.16	5.46	8.19		
36	4.83	7.25	5.54	8.31		
37	4.89	7.34	5.62	8.43		
38	4.96	7.44	5.70	8.55		
39	5.03	7.54	5.79	8.68		
40	5.09	7.64	5.87	8.81		
41	5.16	7.74	5.96	8.94		
42	5.23	7.85	6.05	9.08		
43	5.31	7.96	6.15	9.22		
44	5.38	8.07	6.25	9.37		

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FRESNO COUNTY

Contribution Rates of Members

Percentage of Compensation by Entry Age (Continued)

	MA	LE	FEMALE		
Age	lst \$350	Excess	lst \$350	Excess	
45	5.46%	8.19%	6.35%	9.52%	
46	5 54	8.31	6.45	9.67	
47	5.62	8.43	6.55	9.82	
	. 570	8.55	6.65	9.97	
49	5.79	8.68	6.75	10.13	
50	5.87	8.81	6.86	10.29	
51	5.96	8.94	. 6.97	10.45	
52	6.05	9.07	7.07	10.61	
53	6.14	9.21	7.18	10.77	
54	6.23	9.35	7.29	10.94	
55	6.33	9.49	7.41	11.11	
56	6.42	9.63	7.52	11.28	
57	6.52	9.78	7.63	11.45	
58	6.62	9.93	7.75	11.62	
59	6.72	10.08	7.87	11.80	

SECTION IV

VALUATION OF SYSTEM

In order to make the complete actuarial valuation of the prospective assets and liabilities of the System, it is necessary to adopt assumptions which would reflect the rates and ages at which members separate from active service on account of withdrawal, death, disability and service retirement. In addition to this, a standard of mortality must be adopted for members after retirement for disability. All of these contingencies were examined as part of the investigation covering the experience of the last five years. The assumptions made in regard to these rates are discussed in the following paragraphs.

Mortality After Disability Retirement

Because there are so few members currently on disability retirement, it was necessary to relate your experience to that available among the other counties having comparable investigations recently. The results of this combined experience, coupled with our knowledge of tables used in other public systems, convinced us that a continuation of the present mortality table for disabled lives was justified. This table has been designated as the 1943 Disability Mortality Table and the rates of death assumed in it are included in the schedules at the end of this report.

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Withdrawal

In studying the turnover experience under your System during the five-year period, we separated the members into groups determined by the age at which the member was employed and his number of years of service at the current valuation date. It was observed that those persons who had prior service credit very seldom withdrew from the System. Based upon this observation, for this valuation we have eliminated the rate of withdrawal for these persons. At the same time, for all other members, we have determined rates of withdrawal by attained age, taking into account the weighting effect of the years of service of the member. These rates are based upon the study of the turnover of members who have more than one year of service. The net effect of these new rates of withdrawal is to anticipate an increase of about 11% in the number of withdrawal cases for males and 14% for females, other than for those persons having prior service credit. An increase in withdrawal rates tends to anticipate that a smaller percentage of members will eventually retire.

Death Before Retirement

The experience in Fresno County during the five years has indicated that for males the probability for this contingency should be reduced somewhat from that adopted for the 1957 valuation. For females, the probabilities should remain the same as those adopted previously.

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These probabilities for both males and females are now in line with those found for other counties.

Disability Retirement

Although there was very little experience available under this contingency for the five year period, there were sufficient disability cases to indicate that the male rates should remain the same as were adopted for the last valuation, but the female rates should be substantially increased. From the experience in several of the other counties, we believe these rates are adequate.

Service Retirement

Your experience under service retirement shows that during the last five years there has been a slight tendency for both males and females to retire somewhat earlier than that shown in the previous period. Probabilities of retirement, therefore, were developed to reflect this tendency and, in so doing, to better reflect the distribution of retirement by age. Any tendency for the members to reduce retirement age from 70 down toward age 65 would serve to increase the cost of the retirement benefit to the County.

The rates of separation from active service that have been discussed in the foregoing paragraphs and adopted as the basis for the current actuarial valuation are shown in the schedules at the end of this report.

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Accounting Balance Sheet

The Retirement Board furnished us with a balance sheet of the System as of June 30, 1962, which shows the distribution of the funds on hand. This statement of assets was accepted by us without audit and used in the determination of the net liabilities under the System. We have reproduced an abbreviated version of this balance sheet on the following page.

Of the reserves now held by the Retirement System, Item 5 is the amount now credited to active members' accounts, representing contributions for service to date plus interest credited at the rates prescribed by the Retirement Board. Item 6 is the amount of accumulated contributions made by the County for current service benefits accrued to date for present active members. Items 7 and 8 show the balances in the funds set aside for retired members to provide for current service pensions and annuities now in effect. Item 9 represents the net contributions made to date by the County to provide for prior service pensions that have already been entered upon or will be entered upon by members not yet retired. The actual accounting balance sheet maintained by the Retirement Board shows more than one prior service reserve account. It shows "County Advance Reserve, Prior Service" as a deficit and also shows "Prior Service Pension Reserve." The County has been amortizing all prior service liabilities by regular contributions

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which are credited to the County Advance Reserve, Prior Service. When a member retires, the full actuarial value of his prior service pension is transferred from this reserve to the Pension Reserve. The fact that this reserve shows a deficit at this point means that the actuarial value of all the prior service pensions granted to date exceeds the County prior service contributions to date. The actual prior service pension payments, however, have not exceeded the County contributions. The deficit figure then is merely part of the unfunded prior service liability which will be paid into the System in the future by the regular County prior service contributions. The net amount of those two items would represent the funds actually on hand for prior service pensions that either have already been entered upon or will be entered upon by members not yet retired. Item 10 is the reserve held by the County for paying the 6 months' salary death benefit for those members dying in service but not entitled to receive the special death allowance for the beneficiary. Item 11 is the reserve held to provide the allowance now payable due to the death of members while eligible for retirement. Item 13 is the excess of interest earned over interest credited to members! contribution accounts. This amount represents a contingency reserve to be used if needed in the future because of adverse experience.

ACCOUNTING BALANCE SHEET

as of

June 30, 1962

ASSETS

1.	Cash on hand	\$	16,284.57
2.	Securities owned		11,324,640.78
3.	Contributions due: County \$46,906.23 Member 58,958.65	-	105,864.88
4.	Total assets	\$_	11;446,790.23
	LIABILITIES	Υ.	
5.	Members ¹ deposit reserve	\$	5,109,431.06
6.	Current service reserve		2,895,748.40
7.	Current service pension reserve		1,594,588.11
8.	Annuity reserve		921,576.92
9.	Prior service reserve and pension reserve		648,182.17
10.	Death benefit reserve		9,501.34
11.	Survivors ¹ death benefit reserve		69,529.63
12.	Contributions to be refunded to members already terminated		34,630.26
13.	Surplus		163,602.34
14.	Total liabilities	\$	11,446,790.23

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Actuarial Balance Sheet

On the basis of the various actuarial assumptions discussed in the foregoing sections in this report, an interest rate of 3-1/2%compounded annually and the statement of assets as furnished us, a complete actuarial valuation of the Retirement System was made. The resulting values of prospective assets and liabilities have been set forth in the following actuarial balance sheet.

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ACTUARIAL BALANCE SHEET

as of

June 30, 1962

ASSETS

1. 2. 3.	Total assets from accounting balance sheet Present value of future contributions from members Present value of future contributions from county for:	\$ 11,446,790.23 \$ 6,936,988.00
	(a) Current service pensions \$ 4,312,041.37 (b) Salary death benefits 161,324.00 (c) Prior service 2,307,009.00	\$_6,780,374.37
4.	Total assets	\$ 25,164,152.60
	LIABILITIES	
5.	Present value of retirement allowances payable to retired members: (a) Annuity \$ 895,152.00 (b) Current service 1,508,943.00 (c) Prior service and minimum 2,053,785.00	\$ 4,457,880.00
6.	Present value of retirement allowances payable to present active members: (a) Annuity and current service pensions \$ 14,773,921.00 (b) Prior service and minimum 882,790.00	\$ 15,656,711.00
7.	Present value of death benefits payable to present active members: (a) 6 months' salary benefit \$ 161,324.00 (b) Death while eligible to retire 757,073.00	\$ 918,397.00
8.	Present value of contributions returned to active members a/c withdrawal or death	\$ 3,932,932.00
9.	Contributions to be refunded to members already terminated	\$ 34,630.26
10.	Surplus	\$ 163,602.34
11.	Total liabilities	\$ 25,164,152.60

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Comments on Actuarial Balance Sheet

It will be noted that this balance sheet has been prepared in approximately the same form as the one presented in our last report. On the liability side, Item 5 represents the actuarial value of the allowances which have already been entered upon on account of service and disability retirements. This item has been broken down to show the value of the annuity portion of the allowance, as well as the two pension portions which were derived from County contributions. It is apparent that the actuarially determined present value of the annuities already entered upon is about equal to the ledger reserve. The actuarial value of current service pensions now in effect is also approximately equal to Item 7 on the accounting balance sheet. Any differences between the actuarially determined present values and the reserves as shown in the accounting balance sheet are reflected in the recommended County contribution rates. Item 6 in the actuarial balance sheet represents the actuarial present value of the retirement allowances, for both service and disability, that it is anticipated will be paid to present members who will retire in the future. Item 7 represents the present value of death benefits which it is anticipated will be payable to the present active members. This item does not include the return of members! contributions on death. Item 8 is the present value of the contributions which it is anticipated will be returned to those presently active members who are expected will die or withdraw from the System in the future. Item 9

represents contributions to be refunded to members already terminated. Item 10 is the contingency reserve available in case of adverse experience in the future.

On the asset side of the balance sheet, the first item represents the funds available as taken from the accounting balance sheet. The second item is the actuarial present value of the contributions that will be made in the future by present active members before separation from the System. The third item indicates the present value of the future contributions that must be made by the County to fund the benefits that have already been entered upon or will be entered upon in the future. This item has been shown divided into the three components referred to in Section 31587 of the County Law, namely, current service pensions, death benefits, and prior service pensions.

In the next section of this report, we shall deal with the recommendations which we believe would be advisable to fund these net County liabilities.

SECTION V

RECOMMENDATIONS

On the basis of the current actuarial investigation and valuation of the Fresno County Retirement System, we make the following recommendations in accordance with the provisions of the 1937 County Employees' Retirement Law:

Interest Rate

In view of the discussions set forth in Section III of this report, we recommend that as a basis of all actuarial tables necessary in connection with the operation of the System, an interest assumption of 3-1/2% compounded annually be used.

Contribution of Members

We recommend that the present member rates of contribution remain in use. These rates of contribution are shown in Section III. County Contributions

We recommend that, until revised by subsequent actuarial valuations, the County contribution to the System, as provided for in Section 31582, be set at 4.49% of the first \$350 of monthly compensation and 6.74% of compensation in excess of \$350, of <u>all</u> members (Money Purchase as well as Modified System). You will note that this recommended rate is in a different form than that used in our last report. The reasons for the recommendation of the County contribution rate in this form will be given under the Section entitled "Comment on Cost of the System."

We further recommend, in accordance with the provisions of Section 31587, that the total appropriation recommended above be apportioned as follows:

- First, an amount equal to 2.45% of the first \$350 of monthly compensation, and 3.68% of compensation in excess of \$350 of all members be credited to the County Advance Reserve for Current Service Benefits; and
- Second, an amount equal to .12% of the first \$350 and .18% of the excess of \$350 of that compensation be credited to the County Advance Reserve for Death Benefits; and
- (3) The balance of said appropriation (or 1.92% of the first \$350 and 2.88% of the excess of \$350 of that compensation) be credited to the County Advance Reserve for Prior Service Benefits.

The recommended contribution on account of prior service is designed to amortize the prior service liability over a 10-year period even though the number of years remaining of the period originally selected by the Board is 8-1/2 years. The prior service benefit is based on an average final salary and to whatever extent the actual salaries in the future increase above those assumed in our salary scales, additional prior service liability may fall on the County. Since some fluctuation

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from our assumed scales will certainly occur in the future, we feel it would be wise to retain a 10-year amortization period for funding this additional liability thereby allowing this portion of the County contribution rate to remain more or less level.

In order to facilitate distribution of the full(4.49% of the first \$350 of monthly compensation and 6.74% of monthly compensation in excess of \$350) County contributions, we suggest that the following percentages of each such contribution be credited to the three County Advance Reserve accounts:

54.5%	to	Current Service
2.8%	to	Death Benefit Reserve
42.7%	to	Prior Service Reserve

We further recommend that inasmuch as Section 31587 provides that the appropriation for death benefits during each fiscal year shall be equal to the payment made during the year for death benefits, that any balance which may remain in the County Advance Reserve for Death Benefits at the end of each fiscal year be transferred to the County Advance Reserve for Prior Service Benefits. If the death benefits paid during any year are in excess of the amount available in the County Advance Reserve for Death Benefits, the additional amounts required should be transferred from the Advance Reserve for Prior Service Benefits.

In our opinion, with the adoption by the County of the recommendations made in this Section, the System will continue to be maintained

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on a sound actuarial basis, in accordance with the provisions of the 1937 County Law.

Comments on Cost of the System

It should be pointed out that the present valuation has taken into account all changes that were made in the Retirement Law prior to June 30, 1962, that are applicable to Fresno County.

The last complete valuation of the System was done in 1957 under the Money Purchase basis and resulted in a County rate of 6.21% of salary. Since that valuation, an adjustment has been made in the County rate to reflect the election by some of the members of the modification of benefit because of the adoption of Social Security. Although a complete actuarial investigation and valuation was not done at that time, a partial valuation was made in which the calculations reflected the election by about 90% of the members of the Social Security coverage. The County rate developed by this partial valuation was 3.86%.

As stated above, on the basis of the present valuation, the County contribution rate should be 4.49% of the first \$350 of monthly compensation and 6.74% of the compensation in excess of \$350. This is a substantial increase in the County contribution rate from the former rate.

The factors tending to reduce the County contribution rate were the increase in the interest assumption from 3% to 3-1/2% and the increase in withdrawal rate for both males and females. The increased

withdrawal rate means that fewer persons would be expected to retire. However, a change made in the County Law has tended to offset this reduction. The present County rate of 3.86% assumed that the allowance from the County integrated system plus the member's Social Security benefit could not exceed 75% of the member's "final compensation." This maximum provision has now been deleted and we estimate its deletion accounts for approximately .40% of the increase in County contribution rate. Another reason for the increase in rate is the fact that there is evidence of members retiring slightly earlier than assumed in the last valuation. To the extent that retirement is not delayed beyond the age of 65, this will result in additional liability to the County.

The most important factor causing this increase in County rate was the sharp increase in average salaries of the members. Since 1957, the average salaries have increased about 31%. This has added considerably to the liability for service credited to date. Because of the System being integrated with Social Security, the salary above \$350 per month earns 50% higher credit than the salary below that amount. As an example, if there was a 10% increase in salary, all occurring above the \$350 per month level, which it probably would, this would result in an increase in benefit of 15%. This same 10% increase in salary, however, would result in only 10% increase in County contributions if the County was using a single rate.

In order to avoid the above lag between County contributions and employee benefits, we have recommended the split rate of contribution expressed on the same basis as used in the employee rate. We believe this is the most practical way to express the rate.

In our opinion, with the adoption of the above recommendations, the System will continue to be maintained on a sound actuarial basis in accordance with the provisions of the 1937 County Act.

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SECTION VI

STATISTICAL SECTION

List of Schedules

 Number of Active Members and Total Monthly Salaries by Sex and Attained age.

2. Number of Retired Members and Annual Allowances Being Paid.

3. Probabilities of Separation from the System - Males

4. Probabilities of Separation from the System - Females

5. Rates of Mortality after Service Retirement

6. Rates of Mortality after Disability Retirement

SCHEDULE 1 ·

Number of Members and Total Monthly Salaries

By Sex and Attained Age

A	Mal	e	Fe	male	Tot	al
Age 20 and	No.	Salary	No.	Salary	No.	Salary
20 and under 21 22 23 24	? 10 17 23	\$ 1924 1924 1926 9004	31 180 127 25	\$ 8516 5173 5996 5679 9624	38 24 30 34 48	10440 7097 9172 12589 19228
25 267 29 29	26 338 336 36 36	10428 12667 15559 15550 17523	28 22 25 31 14	10508 8156 9213 11557 5235	54337 5667 50	20936 20823 24772 27107 22758
30 31 33 33 33 34	30 38 37 36	15845 18464 18105 20587 17937	21 20 28 12	8027 6913 10163 3856 5743	518 55 65 59 54	23872 25377 28268 24443 23680
35 367 89 39	35 27 32 40 9	19627 14448 17767 22852 22460	219 193 29 28	7118 7234 12925 10967 10941	54 465 667	26745 21682 30692 33819 33401
4 4 4 4 4 4 4 4 4 4	36 37 30 34 23	18988 19732 16069 18253 12721	34 33 40 31 44	12422 13008 15730 10986 16422	70 70 65 67	31410 32740 31799 29239 29143

Number of Members and Total Monthly Salaries

by Sex and Attained Age

(Continued)

	M	ale	Fe	emale	T	otal
Age	No.	Salary	No.	Salary	No.	Salary.
45 46 47 48 49	2 7 7 7 5 2 2 2 2 6	$ \begin{array}{r} 15618 \\ 19065 \\ 14928 \\ 14103 \\ 13143 \end{array} $	8348 33948 448	$ \begin{array}{r} 1 5938 \\ 12160 \\ 14167 \\ 15456 \\ 15814 \end{array} $	67 70 63 67 69	\$ 29556 31225 29095 29559 28957
50 51 52 53 54	9542 2222 222 222 222 222 222 222 222 222	16157 13001 12520 11451 15636	36 34 27 30 31	13877 12148 11501 11598 11422	65 59 53 58 58	30034 25149 23821 23049 27058
55 567 59 59	3 4 0 9 1 1 1	17163 11778 10156 9779 5181	31 38 20 23	11988 13821 7685 8129 8754	63 62 42 9 4	29150 25599 17841 17908 13935
60 61 63 64	16 199 19 17	7908 8180 9873 4442 8245		7173 8540 5109	33 39 35 20 30	15081 16255 16413 9542 13314
65 66 68 69	7 5 7 4	3915 2564 3397 1959	? 4 2 2 1	2824 1760 701 1235 360	40064	6739 4324 4098 3194 360
70	1	595	1	403	S	998
					2442	A 1072404
Totals	1221	\$619877	1221	\$ 453609	2442	\$ 1013480

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SUMMARY OF ANNUAL ALLOWANCES BEING PAID

Service Retirements	Number	Amount
Unmodified Option 1 Options 2, 3 & 4 Beneficiaries	107 117 28 11	\$ 161,329.92 199,622.76 52,016.52 6,190.68
Total	263	\$ 419,159.88
Disability Retirements		
Unmodified Option 1 Options 2 and 3 Beneficiaries	12 7 1 5	\$ 16,040.64 6,170.04 1,760.04 2,985.12
Total	25	\$ 26,955.84
Death Benefits		
Duty Death		\$ 3,186.60
Grand Total	289	\$ 449,302.32

Probabilities of Separation from the System

(Number separating at each age per 10,000 working at that age)

MALE

Age	Withdrawal	Death	Disability	Service
20 21 23 23 24	2550 2370 2190 2010 1840	8 8 8 9 9		
25 26 27 28 29	1670 1510 1360 1220 1080	9 10 10 10	11111	
30 31 32 33 34	950 850 770 710 670	11 12 13 13	1122	
35 36 37 38 39	630 600 570 540 510	14 15 17 19 20	N N N N 4	
40 41 42 43 44	480 460 440 420 400	22 26 29 32 36	4 5 7 9 11	
45 46 47 489	380 360 340 320 300	40 45 50 55 61	13 16 18 21 23	

Probabilities of Separation from the System

(Number separating at each age per 10,000 working at that age) (Continued)

MALE

Age	Withdrawal	Death	Disability	Service
50 51 52 53 54	280 260 250 230 210	67 73 79 85 92	257912	
55 56 57 59	190 170 150 130 110	99 108 117 127 136	35 38 40 42 45	300 100 100 100 150
60 61 63 64	100 90 80 80 70	146 155 165 177 189		200 300 400 500 600
65 66 68 69	70 60 50 40	201 216 233 252 272		1000 1000 1500 2500 3500
70	×			10000

Probabilities of Separation from the System

(Number separating at each age per 10,000 working at that age)

FEMALE

Age	Withdrawal	Death	Disability	Service
20 21 22 23 24	3800 3600 3400 3190 2990	3 3 3 3 4		а * .
25 26 27 28 29	2790 2600 2420 2250 2100	55666	1 2 2 2 2	
30 31 32 33 34	1950 1810 1680 1550 1430	6 6 7 7	3 3 3 3 3	
35 36 37 38 39	1 3 2 0 1 2 2 0 1 1 2 0 1 0 3 0 9 4 0	8 10 13 14 15	3 3 3 4 4	
40 41 43 44	860 790 740 700 660	16 17 18 19 20	4 5 6 7 8	
45 46 48 49	620 580 540 510 480	2 2 2 4 2 6 2 8 3 0	10 11 12 14 15	

Probabilities of Separation from the System

(Number separating at each age per 10,000 working at that age) (Continued)

FEMALE

Age	Withdrawal	Death	Disability	Service
50 553 553 554	450 420 390 360 320	33 34 36 39 40	17 18 20 22 24	
55 56 57 58 59	280 240 200 170 140	46 54 57 60	260 336 336 3	750 200 200 200 300
60 61 63 64	110 80 60 50 50	63 67 70 73 76		300 400 500 600 700
65 66 67 69	40 40 30 30	80 85 91 97 104		1000 1000 1000 1200 2000
70				10000

Rates of Mortality after Service Retirement (Per Thousand)

Age	Male	Female
55 56 57 58 59	1044 1135 1230 1330 1438	465 510 564 626 700
60 61 63 66 66 66 66	1556 1687 1835 2007 2207	784 879 985 1101 1226
65 66 67 68 69	2442 2719 3011 3299 3594	1360 1499 1646 1820 2035
70 71 72 73 74	3930 4318 4748 5208 5708	2310 2653 3047 3478 3941
75 76 77 78 79	6243 6835 7513 8269 9095	4 4 3 1 4 9 5 1 5 5 1 1 6 1 0 9 6 7 4 6
80 81 82 83 84	9968 10871 11798 12744 13707	7415 8111 8837 9594 10390

Rates of Mortality after Service Retirement (Per Thousand) (Continued)

Age	Male	Female
85	14685	11233
86	15684	12130
87	16712	13088
88	17779	14119
89	18892	15230
901	20059	16433
91	21256	17714
93	22516	19110
93	23852	20634
94	25277	22303
9567 997 999	26802 28446 30222 32152 34253	24134 26145 28358 30795 33481
100	36546	36443
101	39054	39710
102	41798	43315
103	45010	47293
104	48920	51816
105	53760	57054
105	59762	63181
107	67155	70368
108	76172	78785
109	87043	88605
110	100000	100000

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COATES, HERFURTH & ENGLAND, CONSULTING ACTUARIES

Rates of Mortality after Disability Retirement

(Per Thousand)

Age	Rate	Age	Rate
25 26 27 28 39	391 344 329 319 315	55 56 57 58 59	4 1 0 0 0 0 4 4 0 0 0 0 4 4 6 0
30 31 32 33 34	314 315 316 319	60 61 62 63 64	476 491 5025 544
35 36 37 38 39	321 323 325 327 329	65 66 67 63 69	5683 5683 666 666
40 41 42 43 44	335 335 341 345	70 71 72 73 74	692596 72596 836
45 46 47 48 49	349 354 359 364 370	75 76 77 78 79	879 925 976 1029 1085
50 51 52 53 54	376 383 390 398 406		