Red Wing
Fire Department Relief Association
Annual Actuarial Valuation
December 31, 1986

Gabriel, Roeder, Smith & Company

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GABRIEL, ROEDER, SMITH & COMPANY
Actuaries & Consultants

200 Globe Building • 407 East Fort • Detroit, Michigan 48226 • 313-961-3346

June 5, 1987

Board of Trustees
Red Wing Fire Department Relief Association
Red Wing, Minnesota

Submitted in this report are the results of the December 31, 1986 actuarial valuation of the assets, actuarial values and contribution requirements associated with the benefits provided by the Red Wing Fire Department Relief Association.

The valuation results contained in Section A provide the actuarial information needed to determine the employer's "minimum obligation" effective January 1, 1988. Section A also contains comments regarding the valuation results.

The valuation was based upon information furnished by the Association concerning benefits, financial transactions, active members, terminated members, retirants and beneficiaries. Data was checked for year to year consistency but was not otherwise audited by us. This information is summarized in Section B.

A description of the actuarial funding method and the risk experience assumptions used is contained in Section C. The economic risk experience assumptions, as well as the actuarial funding method to be used, are established by state law.

Information needed to comply with Statement No. 5 of the Governmental Accounting Standards Board is contained in Section D.

The actuarial valuation was prepared using generally accepted actuarial principles and practices based upon the methods, assumptions, summary of plan provisions and the member and financial data described in this report.

Respectfully submitted,

Ronald J. W. Smith

Ronald J. W. Smith

Gary W. Findlay

Gary W. Findlay

Section A

Valuation Results

COMMENTS

Economic Assumptions and Financing Method

The economic assumptions of 5% annual investment return and 3-1/2% annual salary increases are established by state law. State law also specifies that the annual minimum obligation of the municipality shall be determined by adding (i) the employer normal cost percent times covered payroll to (ii) the level dollar amount required to amortize the unfunded actuarial accrued liability by December 31, 2010.

It is worth noting that when the same assumptions and methods are applied to plans which differ in nature, the valuation results may not be comparable. Caution should be exercised when attempting to assess the financial condition of one Association relative to another on the basis of valuation results produced using the assumptions and methods mandated by state law.

Change Due to Exclusion of Volunteer Members

The results of the December 31, 1986 actuarial valuation reflect the costs for the full-time members only since the volunteers have been excluded from the plan and were paid lump sum equivalents.

Red Wing Fire Department Relief Association

CONTRIBUTION RATE TO PROVIDE BENEFITS

Member portion & Employer portion
Effective January 1, 1988

Contributions for	If Paid Equally Throughout Year: Normal Cost % of Active Payroll for 1988	+	If Paid Equally Throughout Year: UAAL Dollars
Normal cost of annuities:			
Age & service: to members	19.09%		
Age & service: to survivors	4.01		
Disability	2.79		
Death before retirement	2.42		
Refunds of member contributions	0.20		
Total Normal Cost	28.51%		
Amortization of unfunded actuarial accrued liabilities (UAAL) (23 year level dollar payment)			
Retired lives			$ 0
Active members			104,779
Total			104,779
Total Cost of Benefits	28.51%	+	$104,779
Member contributions	8.00%		
COMPUTED EMPLOYER RATE:			
(a) If Paid Equally Throughout Year	20.51%	+	$104,779
(b) IF PAID AT CALENDAR YEAR END	21.02%	+	$107,367

Red Wing Fire Department Relief Association

Present Actuarial Condition

The Association's accrued actuarial assets were in excess of $3.0 million on December 31, 1986 -- a considerable sum of money if unencumbered and allocated among a small group of persons. This is not the case with the Association's assets.

The following schedule puts the $3.0 million into perspective by showing the relationship between accrued actuarial assets, actuarial accrued liabilities, and the number of persons with actual and potential claims on the Association's assets.

	Accrued Actuarial Assets	Actuarial Accrued Liabilities	Unfunded Actuarial Accrued Liabilities	% Funded
Retirants and Beneficiaries				
Retired Members (8)		$1,509,067		
Surviving Spouses (4)		299,940		
Surviving Children (3)		38,904		
Total (15)	$1,847,911	$1,847,911	$ 0	100.0%
Deferred Members (0)	0	0	0	
Active Members (15)	1,181,299	2,629,666	1,448,367	44.9
Total	$3,029,210	$4,477,577	$1,448,367	67.7%

Actuarial accrued liabilities represent the value, computed as of December 31, 1986 of:

(i) retirement allowances likely to be paid the 15 retirants and beneficiaries; and

(ii) the contributions assumed to have been made for the 15 active members from entry into the plan until December 31, 1986.

The value of retirement allowances likely to be paid the 15 retirants and beneficiaries, discounted for investment earnings and mortality, was computed to be $1,847,911 as of December 31, 1986. To put this amount in perspective, the $1,847,911, together with investment earnings, will just be sufficient to pay the 15 retirants and beneficiaries their allowances for their remaining lifetimes. This assumes the 15 retirants and beneficiaries live and die according to the assumed mortality and the $1,847,911 is invested to yield an average annual return of 5.0% over the remaining lifetimes of the retirants and beneficiaries.

With respect to the active members, the actuarial accrued liability of $2,629,666 represents the amount that would have been accumulated by December 31, 1986. This assumes the normal cost (which is expressed as a level percentage of pay) had been contributed from the date of hire until December 31, 1986 for the 15 actives, and that these amounts had earned 5.0% interest. It also assumes that the members in the past had lived, died, withdrawn, retired and received salary increases according to the actuarial assumptions shown in this report.

Historical Funding Ratio Schedule
($ in thousands)

Valuation Date December 31	Actuarial Accrued Liabilities	Accrued Actuarial Assets	Percent Funded
1978	$1,702	$ 566	33.3%
1979	N/A	N/A	N/A
1980	2,716	824	30.3
1981	2,976	1,035	34.8
1982	3,277	1,327	40.5
1983	3,523	1,649	46.8
1983*	3,756	1,649	43.9
1984	3,983	2,091	52.5
1985	4,234	2,560	60.5
1986	4,477	3,029	67.7

* After change in assumptions.

Red Wing Fire Department Relief Association

Computed Contributions - Comparative Schedule

Year Ended December 31 Valuation	Fiscal	Total Normal Cost as a Percent of Valuation Payroll*	Contribution For Unfunded Actuarial Accrued Liabilities $ or %
1978	1980	26.71%	$ 71,087
1979	1981	N/A	N/A
1980	1982	27.06	121,907
1981	1983	26.98	127,088
1982	1984	26.83	129,982
1983	1985	26.83	127,182
1983	1985**	29.02	142,997
1984	1986	28.82	130,964
1985	1987	28.47	118,385
1986	1988	28.51	104,779

* Includes employee contributions.

** After change in assumptions.

Red Wing Fire Department Relief Association

CONTRIBUTION FOR CALENDAR YEAR EFFECTIVE JANUARY 1, 1988

For any period of time the percent-of-payroll contribution rate is converted to dollars. The amount of dollars for any calendar year depends upon the results of the last actuarial valuation, and the timing of contributions within the year. The later the contribution date, the greater the dollar amount will be.

The municipality's dollar contribution for the year may be determined as follows:

(1)	Estimated covered payroll for 1988		$_____	
(2)	Total normal cost % from page A-2		28.51%	
(3)	Total normal cost (Line 1 times line 2)			$_____
(4)	Amortization payment on UAAL from page A-2			104,779
(5)	Total contributions required (Line 3 plus line 4)			_____
(6)	Employee contributions (Line 1 times 8%)		$_____	
(7)	(a) State amortization aid based on 12/31/78 UAAL of $1,135,939	$17,096		
	(b) State amortization aid based on 1984 legislation	_____		
	(c) Total State amortization aid			
(8)	Estimated insurance premium aid		_____	
(9)	Estimated total contributions from other sources (Line 6 plus line 7 plus line 8)			_____
(10)	Employer's Minimum Obligation if payment is made in equal installments throughout the year (Line 5 minus line 9)			$_____
(11)	EMPLOYER'S MINIMUM OBLIGATION IF PAYMENT IS MADE AT YEAR END (Line 10 times 1.0247)			$_____

Section B

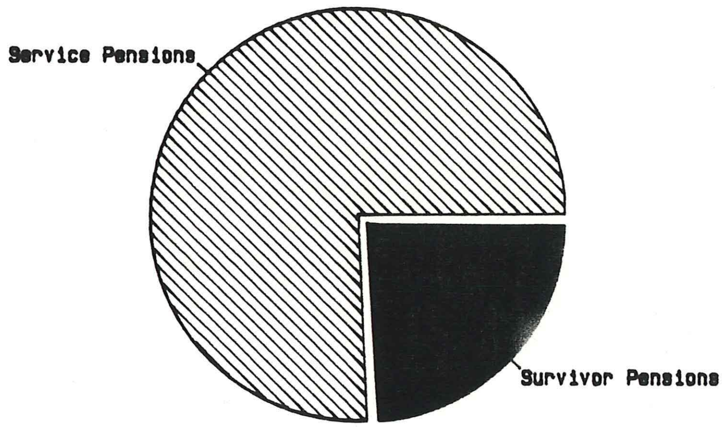
Valuation Data
and
Summary of Benefit Provisions

Red Wing Fire Department Relief Association

Retirants and Beneficiaries December 31, 1986

By Type of Annuity Being Paid

Type of Annuity Being Paid	No.	Monthly Amounts	Computed Actuarial Accrued Liabilities
Retirants receiving:			
Age & Service	8	$7,280.07	$1,509,067
Disability	0	0.00	0
Totals	8	7,280.07	1,509,067
Beneficiaries receiving:			
Spouse	4	1,848.96	299,940
Child	3	469.38	38,904
Totals	7	2,318.34	338,844
Totals	15	$9,598.41	$1,847,911



Monthly Amount Paid by Benefit

Red Wing Fire Department Relief Association

Retirants and Beneficiaries December 31, 1986

By Attained Ages

Attained Ages	Number: Age & Service	Disability	Death Before Retirement
Under 20			3
50-54	1		
55-59	4		
60-64	3		
65-69	1		
70-74	1		
75-79	1		
80-84	1		
Totals	12	0	3

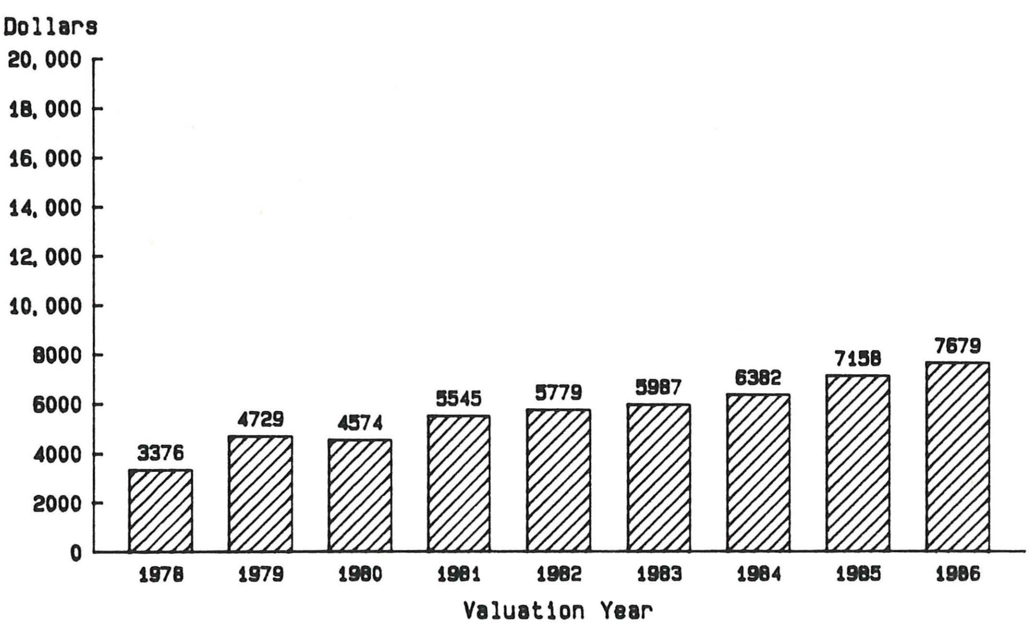
Red Wing Fire Department Relief Association

Retirants and Beneficiaries Added to and Removed from Rolls

Comparative Statement

Valuation Date December 31	No. Added to Rolls	No. Removed from Rolls	Rolls End of Year No.	Rolls End of Year Annual Allowances	Discounted Value of Total Allowances
1978			12	$ 40,508	$ 655,342
1979			12	56,753	839,734
1980	3	1	14	64,040	922,157
1981		4	10	55,453	880,048
1982	4	1	13	75,124	1,045,394
1983			13	77,836	1,124,415
1984	2	2	13	82,960	1,228,735
1985	1	1	13	93,048	1,436,089
1986	3	1	15	115,181	1,847,911

Average Annual Allowances



Red Wing Fire Department Relief Association

Active Members December 31, 1986

By Attained Age and Years of Service

Attained Age	Years of Service to Valuation Date 0-4	5-9	10-14	15-19	20-24	25-29	30 Plus	Totals No.	Valuation Payroll
40-44			3					3	$ 85,500
45-49			2	1				3	83,964
50-54			2	2		3		7	217,453
55-59				1	1			2	57,360
Totals			7	4	1	3		15	$444,277

While not used in the financial computations, the following group averages are computed and shown because of their general interest.

Age: 49.7 years.

Service: 18.6 years.

Annual Pay: $29,618.

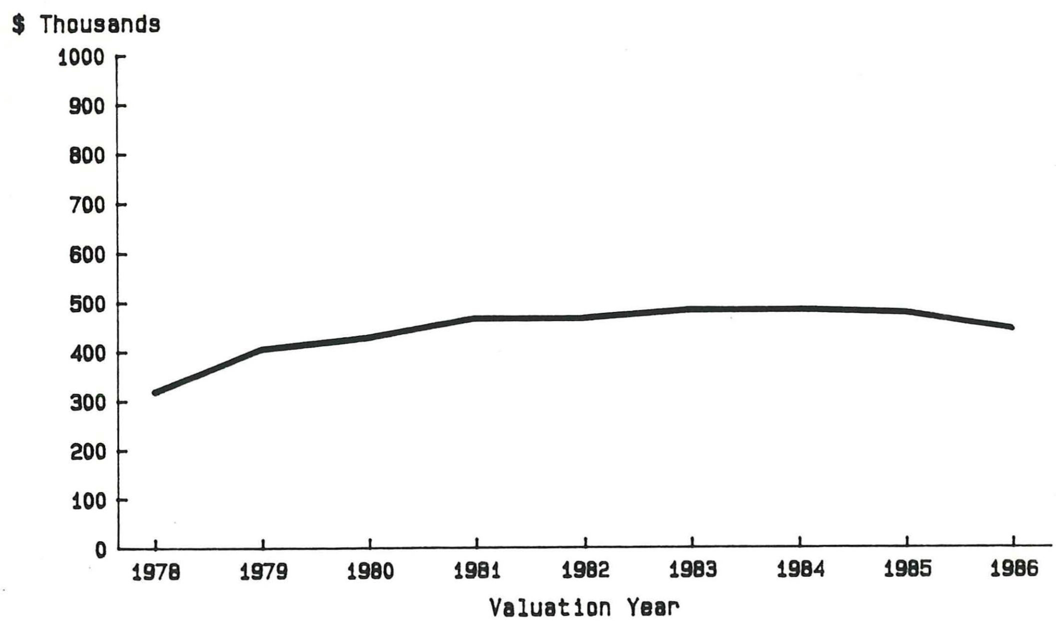
Red Wing Fire Department Relief Association

Comparative Schedule

Of Active Members

Valuation Date December 31	Active Members	Valuation Payroll	Average Age	Average Service	Average Pay	Average % Incr.
1978	21	$319,716	42.6 yrs.	11.7 yrs.	$15,225	- %
1979	21	407,088	43.6	12.7	19,385	27.3
1980	20	430,099	45.2	13.9	21,505	10.9
1981	20	468,791	46.2	14.9	23,440	9.0
1982	19	468,269	46.9	15.9	24,646	5.1
1983	19	485,352	47.9	16.9	25,545	3.6
1984	18	484,258	48.5	17.6	26,903	5.3
1985	17	477,804	49.4	18.4	28,106	4.5
1986	15	444,277	49.7	18.6	29,618	5.4

Valuation Payroll



Red Wing Fire Department Relief Association

Brief Summary (12/31/86) of Benefit Provisions Evaluated and/or Considered

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Age & Service Retirement

Eligibility. 20 years of service and 50 years of age.

Amount. For first 20 years of service, 40% of average annual wage. For each year in excess of 20 but less than 25, an additional 2% is added and for each year in excess of 25 an additional 1-1/2% is added. (Of the additional 1-1/2% for years over 25, 1/2% is not subject to the post retirement adjustment provisions.)

Average Annual Wage. Average annual salary for 3 highest paid years.

Disability Retirement

Eligibility. Disabled to the extent that no longer able to perform the duties of a firefighter before being eligible for age & service retirement.

Amount.

Duty Related. 40% of average annual wage plus 2% for each year in excess of 20 to a maximum of 50%.

Non-duty Related. 2% of average annual wage for each year of service. Minimum of 10% and maximum of 40%.

Member's Death While Active, Or In Deferred Status, Or Retired

Eligibility.

Spouse. Married to member at least one year at separation from service and residing with member at time of death. Benefits terminate upon remarriage.

Child. Younger than age 18.

Amount.

Spouse. 25% of average annual wage.

Child. 8% of average annual wage per child.

Funeral Expenses. Lump sum payment of $1,000 at time of death of active or retired member.

Vested Deferred. 20 years of service and separated before age 50. Payment beginning is deferred to attainment of age 50.

Post Retirement Adjustment ("Escalator"). Benefits are increased January 1 for all benefit recipients in accordance with the increase in the Consumer Price Index during the preceeding year.

Member Contributions. 8% of basic compensation. Total member contributions are refundable, without interest, if no monthly benefit is payable upon separation from service.

Section C

Valuation Methods and Assumptions

Red Wing Fire Department Relief Association

Valuation Methods and Assumptions

The Entry Age Normal Cost method was used to determine the normal cost of all benefits. The rate of investment return (interest) as required by state law used in making the valuation was 5.0 percent per annum, compounded annually. Age & service retirement was assumed to occur at age 58, or attained age if older.

Mortality Table*

	Single Life Values: Present Value of $1 Monthly					
	Level For Life		Increasing 3.5% Yearly		Future Life Expectancy (Years)	
Sample Ages	Men	Women	Men	Women	Men	Women
45	$177.21	$189.58	$280.82	$314.75	29.50	34.00
50	163.12	177.21	246.55	280.82	25.20	29.50
55	147.50	163.12	212.60	246.55	21.16	25.20
60	130.52	147.50	179.49	212.60	17.42	21.16
65	112.87	130.52	148.28	179.49	14.05	17.42
70	95.20	112.87	119.70	148.28	11.09	14.05
75	77.77	95.20	93.83	119.70	8.52	11.09
80	61.71	77.77	71.69	93.83	6.39	8.52

* UP-1984 Table set forward 2 years for males and set back 3 years for females.

Sample Rates of Separation from Active Employment

Before Retirement, Death or Disability

Sample Ages	% of Active Members Separating within Next Year
20	1.50%
25	1.25
30	1.00
35	0.75
40	0.50
45	0.25
50+	0.00

Pay Adjustment Factor Used To Project Current Pays

Sample Ages	Present Pay Resulting in Pay of $1,000 at Age 60	Present Increase in Pay During Next Year
20	$ 253	3.5%
25	300	3.5
30	356	3.5
35	423	3.5
40	503	3.5
45	597	3.5
50	709	3.5
55	842	3.5
60	1,000	3.5

Use of the pay adjustment factor illustrated above is required by state law.

Anticipated Disability Retirements

Sample Ages	% of Active Members Becoming Disabled within Next Year
20	0.08%
25	0.08
30	0.08
35	0.08
40	0.20
45	0.26
50	0.49
55	0.89

Section D

The Pension Benefit Obligation and Certain Other Disclosures Required by Statement No. 5 of the Governmental Accounting Standards Board

PENSION BENEFIT OBLIGATION

The amount shown below as the "pension benefit obligation" is a standardized disclosure measure of the present value of pension benefits, adjusted for the effects of projected salary increases, estimated to be payable in the future as a result of employee service to date. The measure is the actuarial present value of credited projected benefits and is intended to (i) help users assess the plan's funding status on a going-concern basis, (ii) assess progress being made in accumulating sufficient assets to pay benefits when due, and (iii) allow for comparisons among public employee retirement plans. The measure is independent of the actuarial funding method used to determine contributions to the plan.

The pension benefit obligation was determined as part of an actuarial valuation of the plan as of December 31, 1986. Significant actuarial assumptions used in determining the pension benefit obligation include (a) a rate of return on the investment of present and future assets of 5.0% per year compounded annually, (b) projected salary increases of 3.5% per year compounded annually, attributable to inflation, and (c) the assumption that benefits will increase 3.5% per year after retirement.

At December 31, 1986, the unfunded pension benefit obligation was $1,445,583, determined as follows:

Pension Benefit Obligation:	
Retirees and beneficiaries currently receiving benefits and terminated employees not yet receiving benefits	$1,847,911
Current employees --	
Accumulated employee contributions including allocated investment income	325,600
Employer financed	2,182,710
Total Pension Benefit Obligation	$4,356,221
Net assets available for benefits, at cost (market value was $3,266,353)	2,910,638
Unfunded Pension Benefit Obligation	$1,445,583

Appendices

APPENDIX I

FINANCIAL PRINCIPLES AND OPERATIONAL TECHNIQUES

Promises Made, and Eventually Paid. As each year is completed, the plan in effect hands an "IOU" to each member then acquiring a year of service credit -- the "IOU" says: "The Pension Plan owes you a portion of your retirement benefits, payments to be made in cash, commencing when you qualify for retirement."

The related key financial questions are: Which generation of taxpayers contributes the money to cover the IOU? The present taxpayers, who receive the benefit of the member's present year of service? Or the future taxpayers, who happen to be in town paying taxes at the later time when the IOU becomes a cash demand?

A sound principle of sound retirement plan financing is to have this year's taxpayers contribute the money to cover the IOUs being handed out this year. By following this principle, THE CONTRIBUTION RATE WILL REMAIN APPROXIMATELY LEVEL FROM GENERATION TO GENERATION -- our children and grandchildren will contribute the same percents of active payroll we contribute now.

A PENSION PLAN BECOMES CLOSED

The diagram in this appendix shows two important activities which occur after a plan has been closed to employees hired in the future.

Cash benefits paid continue to increase for decades, while active member payroll begins to decrease to zero.

Funding Method. A funding method is the long-term, planned pattern for employer contributions.

For an open plan (a plan covering future employees), the level-percent-of-active-member payroll funding method is the basic funding method.

The level-percent funding method can also be applied to a closed plan. However, the resulting contribution percent usually jumps to a high rate, because the number of covered active members is decreasing.

A preferred funding method for a closed plan consists of: level-percent funding for normal cost (the cost of members' service now being rendered); plus a level dollar contribution for unfunded actuarial accrued liabilities over a limited period of years. The period of years must be limited so that plan assets don't become zero while benefits are still payable.

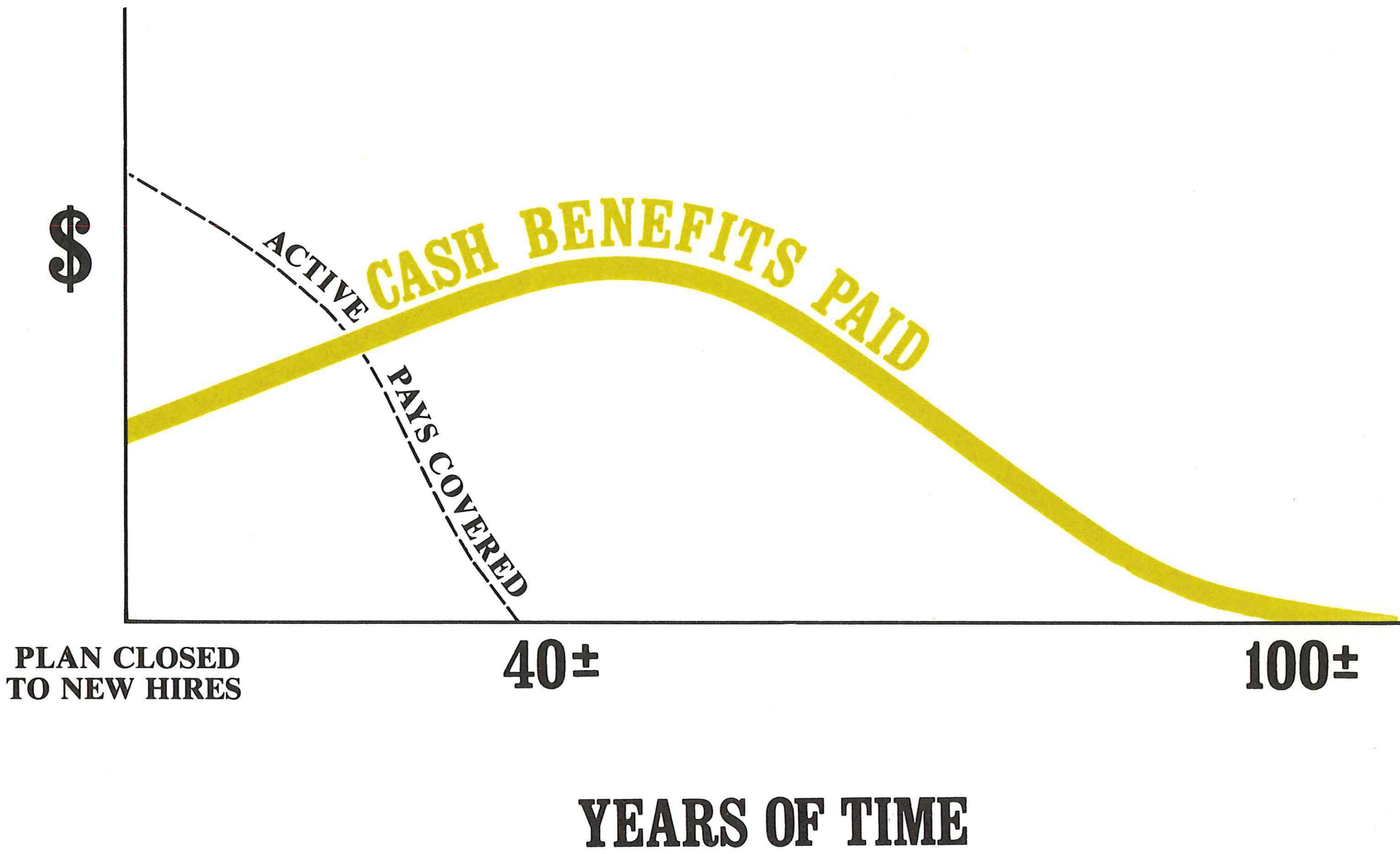
Computing Contributions To Support Plan Benefits. From a given schedule of benefits and from the employee data and asset data furnished him, the actuary determines the contribution rates to support the benefits by means of an actuarial valuation and a funding method.

In making an actuarial valuation, assumptions must be made regarding anticipated financial experiences for the next year and for decades in the future. Only the subsequent actual experience of the plan can indicate the degree of accuracy of the assumptions.

Reconciling Differences Between Assumed Experience and Actual Experience. Once actual experience has occurred and been observed, it will not coincide exactly with assumed experience, regardless of the wisdom of the assumptions or the skill of the actuary and the millions of calculations he made. The future can be predicted with considerable but not 100% precision, except for inflation which seems to defy reliable prediction.

A well-managed plan copes with these continually changing differences by having periodic actuarial valuations. Each actuarial valuation is a complete recalculation of assumed future experience, taking into account all past differences between assumed and actual experience. The result is continuing adjustment in financial position.

A CLOSED PENSION PLAN



A plan becomes closed when no new hires are admitted to active membership. The persons covered by the plan at the time of closing continue their normal activities and continue to be covered by the plan, until the last survivor dies.

CASH BENEFITS LINE. After a pension plan becomes closed, the usual pattern is for cash benefits to continue to increase for decades of time. Eventually the cash benefits will peak, and then gradually decrease over more decades of time, ultimately to zero. The last cash benefit is likely to occur a century after the time the plan is closed.

The precise amounts of cash benefits cannot be known now, and must be estimated by assumptions of future experiences in a variety of financial risk areas.

APPENDIX II

MEANING OF UNFUNDED ACCRUED LIABILITIES

Almost every pension plan (public or private) has "unfunded accrued liabilities", so whatever they are, they aren't rare. Since the term is not part of everyday conversation, it needs some definition.

"Accrued liabilities" are the present value $ of plan promises to pay benefits in the future based upon service already rendered - - - a liability has been established ("accrued") because the service has been rendered, but the resulting monthly cash benefit may not be payable until years in the future. Accrued liabilities $ are the result of complex mathematical calculations, which are made by the plan's actuary (which is the name given to the specialist who makes such calculations).

If "accrued liabilities" at any time exceed the plan's accrued assets (cash & investments), the difference is "unfunded accrued liabilities". This is the common condition. If the plan's assets equalled the plan's "accrued liabilities", the plan would be termed "fully funded". This is a rare condition.

Each time a plan adds a new benefit which applies to service already rendered, an "accrued liability" is created, which is also an "unfunded accrued liability" because the plan can't print instant cash to cover the accrued liability. Payment for such unfunded accrued liabilities is spread over a period of years, commonly in the 20-40 year range.

Unfunded accrued liabilities can occur in another way: If actual financial experience is less favorable than assumed financial experience, the difference is added to unfunded accrued liabilities. In plans where plan benefits are directly related to an employee's pay near time of retirement (a common plan provision) rather than his average pay throughout his working career, unfunded accrued liabilities have been increasing in recent years because unexpected rates of pay increase have created additional accrued liabilities which could not be matched by reasonable investment results. Some of these unexpected pay increases are the direct result of inflation, which is a very destructive force on financial stability.

The existence of unfunded accrued liabilities is not bad, then (any more than a mortgage on your house is "bad"), but the changes from year to year in amount of unfunded accrued liabilities are important - - - "bad" or "good" or somewhere in between.

Nor are unfunded accrued liabilities a bill payable immediately (your food costs are payable immediately), but it is important that policy-makers prevent the amount from becoming unreasonably high and it is vital that your plan have a sound method for making payments toward them so that they are controlled.

The existence of large amounts of unfunded accrued liabilities indicates that total contributions in past years were less than level - - - an almost certain history if retired life liabilities are not fully funded now.