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AMERICAN INSTITUTE EXAMINATIONS

(NOTE.—The fact that these answers appear in THE JOURNAL OF ACCOUNTANCY should not lead the reader to assume that they are the official answers of the board of examiners. They represent merely the personal opinions of the editors of the *Students' Department.*)

EXAMINATION IN ACCOUNTING THEORY AND PRACTICE—PART I (*continued*)

November 18, 1926, 1 P. M. to 6 P. M.

The candidate must answer the first three questions and one other question.

No. 2 (15 points):

The X Y Z company maintains a central warehouse at Chicago and operates stores in Chicago and several other cities.

Goods are shipped from the warehouse to the stores when the proper formal requisitions are made by the store managers, and these goods are billed at purchase cost, plus a certain percentage to cover actual warehouse expense, the freight thereon being paid by the receiver.

Reports of quantities on hand are sent by each store manager to the central warehouse every week. In some instances, surplus stock of one store is shipped to another upon instructions by the central warehouse and in such cases the freight from point of shipment to destination is paid by the receiver.

Dead stock is usually sold by each store at special sales but at times such stock is returned to the central warehouse which sells it to jobbers specializing in odd lots.

State the more important points to be watched and noted when valuing the inventory and determining profits by stores.

Solution:

Merchandise on hand at branches is subject to the same general principles of valuation that apply to all merchandise constituting stock in trade. Accordingly, the generally accepted basis of cost or market, whichever is lower, should ordinarily be used. In the case of salable merchandise on hand at branches, cost will be the cost at the home office plus a proper proportion of warehouse expense and cost of transportation from the central warehouse to the branch.

The cost of merchandise which has been received by one branch from another should include no amount for freight, warehouse expense or handling charges in excess of what those items would have been had the merchandise been received directly from the central warehouse.

Any additional costs incurred because of inter-branch shipments should be treated as expenses and reflected in special, appropriately described accounts on the home-office books.

Dead stock should be valued in the inventory at the estimated selling price thereof, less the amount of selling or reconditioning expenses which will have to be incurred in accomplishing the sale.

The treatment of losses resulting from the sale of dead stock or mark downs on such merchandise remaining unsold depends upon conditions. If the dead stock is a result of the home office overstocking the branches or shipping them merchandise unsuited for their trade, the resulting losses should be borne by the home office. When, however, dead stock results from conditions within the control of the branch, losses thereon should be borne by the branch. In the event that dead stock is shipped back to the central warehouse for sale, transportation and handling charges should be treated in the same manner as the losses resulting from the sale.

It would be well for the accountant to verify the accuracy of the percentage used in charging the branches for warehouse expenses. Any material difference between the rate used and the correct rate as determined on the basis of actual costs should be adjusted by charging or crediting the respective branches with any under-charge or over-charge for this expense.

No. 3 (25 points):

A trial balance, as at December 31, 1925, and (so-called) quarterly operating statements of the A B company, together with certain supplementary information, are herewith presented.

You are required to prepare therefrom correct balance-sheet as of December 31, 1925, and income account for the period ended at that date, making what adjustments you think necessary and outlining, briefly, the governing accounting axioms and principles on which they are made; also reconcile the correct profit or loss for the year with that shown on the "operating" statement.

Trial balance—December 31, 1925

Land	$100,000	
Buildings	1,000,000	
Machinery	1,500,000	
Accounts receivable	170,000	
Notes receivable	20,000	
Cash	75,000	
Capital stock, common—$100 par		$1,000,000
Five year 7% notes, dated January 1, 1925		500,000
First mortgage 6% twenty-year bonds—$1,000,000 par value issued—dated January 1, 1925		900,000
Notes payable—N. Y. national bank		500,000
Accounts payable		201,000
Sales		500,000
Purchases, raw material	425,000	
Operating expenses—factory	150,000	
Depreciation, buildings—2% per annum	20,000	
" machinery—10% " "	150,000	
Reserve for depreciation		170,000
Salaries, officers	30,000	
" salesmen	20,000	
" office	10,000	
Interest on 6% bonds	60,000	
" " 7% notes	35,000	
" " notes due bank	6,000	
	$3,771,000	$3,771,000

Operating statements

Three months ending:	Mar. 31	June 30	Sept. 30	Dec. 31	Yr. 1925
Sales	$	$	$	$500,000	$500,000
Raw material purchased	$	$	$200,000	$225,000	$425,000
Operating expense, factory				150,000	150,000
Salaries paid:					
Officers	7,500	7,500	7,500	7,500	30,000
Salesmen				20,000	20,000
Office	1,000	1,000	2,000	6,000	10,000
Interest:					
On bonds	15,000	15,000	15,000	15,000	60,000
On 7% notes	8,750	8,750	8,750	8,750	35,000
On notes due bank				6,000	6,000
	$32,250	$32,250	$233,250	$438,250	$736,000
Loss	$32,250	$32,250	$233,250		$236,000
Profit				$61,750	
Construction:					
Buildings	$500,000	$500,000			$1,000,000
Machinery		500,000	1,000,000		1,500,000

Inventories—December 31, 1925:

Raw material, $100,000; goods in process, $75,000; finished goods, $75,000. Manufacturing operations started October 1, 1925. No raw material was used for construction. Officers and clerks were wholly engaged in supervising and recording construction work to October 1, 1925. Notes to the N. Y. national bank can be renewed for period in excess of one year.

Solution:

In considering the trial balance of the A B company at December 31, 1925, it will be noted that the par ($1,000,000) of the issue of first mortgage 6% twenty-year bonds, dated January 1, 1925, is $100,000 in excess of the amount shown ($900,000). An adjustment should be made to record the unamortized bond discount, and to increase the amount of the bonds outstanding to par. Journal entry No. 1, which follows, should be made.

Journal entry No. 1

Unamortized bond discount	$100,000	
To—First mortgage 6%, twenty-year bonds		$100,000
To record the unamortized bond discount on the above bonds as of January 1, 1925.		

As the company has constructed its own building and machinery, it is important that we distinguish between capital and revenue charges and ascertain whether or not a proper distribution of these has been made. A generally recognized rule permits the capitalization of such charges as taxes, insurance, rent and supervision incurred during the construction period, so that a company constructing its own plant and machinery will not be burdened with a loss or an accumulated deficit before it begins its operations.

The period of construction in this case includes the first three quarters of the year 1925, and the charges for supervision and interest as shown in the

operating statements for this period should be capitalized. As bond discount is a form of interest, the amortized portion applicable to the period of construction should be capitalized also. By the straight-line method of amortization, the yearly charge for bond discount is found to be ($100,000 ÷ 20) $5,000, or $1,250 a quarter. If we include this charge with the cost of supervision and interest, we have the following adjusted statement, by periods, of costs to be capitalized:

	Three months ended			
	March 31st	June 30th	Sept. 30th	Total
Salaries paid:				
Officers	$7,500	$7,500	$7,500	$22,500
Office	1,000	1,000	2,000	4,000
Interest:				
On bonds	15,000	15,000	15,000	45,000
On 7% notes	8,750	8,750	8,750	26,250
Bond discount amortized	1,250	1,250	1,250	3,750
Total	$33,500	$33,500	$34,500	$101,500
Construction:				
Buildings	$500,000	$500,000	$	$1,000,000
Machinery		500,000	1,000,000	1,500,000

From the above construction data the following distribution of additional costs may be made as between the cost of the building and of the machinery:

	Buildings	Machinery	Total
Quarter ended:			
March 31st 100%	$33,500	$	$33,500
June 30th ..... 50% each	16,750	16,750	33,500
September 30th 100%		34,500	34,500
Total	$50,250	$51,250	$101,500

The entry to record these charges follows:

Journal entry No. 2

Buildings	$50,250	
Machinery	51,250	
To—Salaries, officers		$22,500
Salaries, office		4,000
Interest on 6% bonds		45,000
Interest on 7% notes		26,250
Unamortized discount on bonds		3,750

To charge as a part of the cost of construction of building and machinery the amount of salaries, interest, and bond discount applicable to the period of construction.

In considering the factor of depreciation on the fixed assets of this company, the candidate should bear in mind the accounting principle that depreciation does not begin to accrue until the fixed assets are completed. The construction statistics show that the building was completed by June 30, 1925, and was used for the construction of the machinery, which was completed by September 30, 1925.

Depreciation, therefore, should be charged on the building for the half year, July 1, 1925, to December 31, 1925, and on the machinery for the quarter, October 1, 1925, to December 31, 1925. But as manufacturing operations did not commence until October 1, 1925, the depreciation on the building for the quarter ended September 30, 1925, should not be charged to operations but should be charged to the cost of constructing the machinery, on the same principle that was followed in capitalizing other expenses of the construction period. This is accomplished by the following entries:

Journal entry No. 3

Depreciation, building	$5,251	
To—Reserve for depreciation, building		$5,251
To write off depreciation for the period, July 1, 1925, to September 30, 1925, at the rate of 2% per annum.		
Cost	$1,050,250	
2% annual rate	$21,005	
Depreciation for quarter	$5,251	

Journal entry No. 4

Machinery	$5,251	
To—Depreciation, building		$5,251
To charge the cost of machinery constructed with the amount of depreciation on building used solely for such construction.		

Manufacturing operations should be charged with the amount of depreciation on the constructed building and machinery for the period of such operation, that is, October 1, 1925, to December 31, 1925.

Journal entry No. 5

Depreciation, building	$5,251	
Depreciation, machinery	38,912	
To—Reserve for depreciation, building		$5,251
Reserve for depreciation, machinery		38,912
To record the following depreciation charges for the period, October 1, 1925, to December 31, 1925:		

	Building	Machinery
Cost	$1,050,250	$1,556,501
Annual rate	2%	10%
Depreciation for quarter	$5,251	$38,912

A B COMPANY

Working papers for the year ended December 31, 1925

	Trial balance, December 31, 1925		Adjustments		Manufacturing		Profit and loss		Balance-sheet	
	DR.	CR.	DR.	CR.	DR.	CR.	DR.	CR.	DR.	CR.
Land	$100,000								$100,000	
Buildings	1,000,000		$50,250 (2)						1,050,250	
Machinery	1,500,000		51,250 (2) 5,251 (4)						1,556,501	
Accounts receivable	170,000								170,000	
Notes receivable	20,000								20,000	
Cash	75,000								75,000	
Capital stock, common, $100 par		$1,000,000								$1,000,000
Five-year, 7% notes, dated January 1, 1925		500,000								500,000
First mortgage, 6%, twenty-year bonds, $1,000,000 par value issued, dated January 1, 1925		900,000		$100,000 (1)						1,000,000
Notes payable, N. Y. National Bank		500,000								500,000
Accounts payable		201,000								201,000
Sales		500,000						$500,000		
Purchases, raw materials	425,000				$425,000					
Operating expenses, factory	150,000				150,000					
Depreciation, buildings, 2% per annum	20,000		5,251 (3) 5,251 (5)	5,251 (4) 20,000 (6)	5,251					
Depreciation, machinery, 10% per annum	150,000		38,912 (5)	150,000 (6)	38,912					
Reserve for depreciation		170,000	170,000 (6)							
Salaries, officers	30,000			22,500 (2)			$7,500			
Salaries, salesmen	20,000						20,000			
Salaries, office	10,000			4,000 (2)			6,000			
Interest on 6% bonds	60,000			45,000 (2)			15,000			
Interest on 7% notes	35,000			26,250 (2)			8,750			
Interest on notes due to bank	6,000						6,000			
	$3,771,000	$3,771,000								

Unamortized discount on bonds	$100,000 (1)	3,750 (2) 1,250 (8)				95,000	
Reserve for depreciation, buildings		5,251 (3) 5,251 (5)					10,502
Reserve for depreciation, machinery		38,912 (5)					38,912
Inventories:							
Raw materials	100,000 (7)					100,000	
Goods-in-process	75,000 (7)					75,000	
Finished goods	75,000 (7)					75,000	
Manufacturing account:							
Raw materials		100,000 (7)		$100,000			
Goods-in-process		75,000 (7)		75,000			
Finished goods		75,000 (7)		75,000			
Discount on bonds amortized	1,250 (8)				1,250		
	$677,415	$677,415					
Cost of goods manufactured and sold (to profit-and-loss account)				369,163	369,163		
			$619,163	$619,163			
Net profit (to surplus)					66,337		66,337
					$500,000	$500,000	$3,316,751	$3,316,751

To clear the accounts of the incorrect amount of depreciation already recorded the following entry should be made:

Journal entry No. 6

Reserve for depreciation	$170,000	
To—Depreciation, building		$20,000
Depreciation, machinery		150,000

To reverse the entry of (date), journal page number ——.

The inventories at December 31, 1925, are recorded by the following entry:

Journal entry No. 7

Inventory, raw material	$100,000	
Inventory, goods-in-process	75,000	
Inventory, finished goods	75,000	
To—Manufacturing account		$250,000

To record the closing inventories.

It is realized that the adjustments made for depreciation should affect the inventories of work-in-process and finished goods, but as the problem does not give sufficient data to enable the candidate to arrive at a correct amount no adjustment of these inventories is attempted in the solution.

That portion of bond liscount applicable to the last quarter should be charged to operations as follows:

Journal entry No. 8

Discount on bonds, amortized	$1,250	
To—Unamortized discount on bonds		$1,250

To amortize bond discount for period, October 1, 1925, to December 31, 1925.

Exhibit "A"

A B Company

Statement of cost of goods manufactured and sold for the period, October 1, 1925, to December 31, 1925

Raw materials:		
Purchases	$425,000	
Less: inventory, December 31, 1925	100,000	
		$325,000
Operating expenses (other than depreciation)		150,000
Depreciation:		
Buildings	$5,251	
Machinery	38,912	
		44,163
Cost of manufacturing		$519,163
Less: Inventory, goods-in-process, at December 31, 1925		75,000
Cost of goods manufactured		$444,163
Less: Inventory, finished goods, at December 31, 1925		75,000
Cost of goods sold		$369,163

Exhibit "B"

A B COMPANY

Statement of profit and loss for the period, October 1, 1925, to December 31, 1925

Sales			$500,000
Cost of goods sold (exhibit "A")			369,163
Gross profit			$130,837
Deduct expenses:			
Salaries:			
Officers	$7,500		
Salesmen	20,000		
Office	6,000		
		$33,500	
Interest:			
On 6% bonds	$15,000		
On 7% notes	8,750		
On bank loans	6,000		
Discount on bonds	1,250		
		31,000	
			64,500
Net profit			$66,337

Reconciliation of correct profit and loss with that shown on the "operating" statement

	Operating statement	Correct profit and loss	Difference	
Sales	$500,000	$500,000		
Raw material purchased	$425,000	$175,000	$250,000	(A)
Operating expense, factory	150,000	150,000		
Salaries paid:				
Officers	30,000	7,500	22,500	(B)
Salesmen	20,000	20,000		
Office	10,000	6,000	4,000	(B)
Interest:				
On bonds	60,000	15,000	45,000	(C)
On 7% notes	35,000	8,750	26,250	(C)
On notes due bank	6,000	6,000		
Depreciation:				
Buildings		5,251	5,251*	(D)
Machinery		38,912	38,912*	(D)
Discount on bonds, amortized		1,250	1,250*	(E)
Total deduction	$736,000	$433,663	$302,337	
Loss, per operating statement	$236,000		236,000	
Corrected profit		$66,337	$66,337	

Explanation of differences:

(A) Amount of inventories on hand at December 31, 1925, not considered in the operating statement.

(B) Salaries applicable to cost of construction which were capitalized.

(C) Interest charges which were considered as a construction cost and capitalized.

(D) Depreciation applicable to the period of operations, not deducted in the so-called "operating statement."

(E) Amount of bond discount applicable to the period of operations and not considered in the "operating statement."

Exhibit "C"

A B COMPANY

Balance-sheet, December 31, 1925

Assets

Current assets:				
Cash			$75,000	
Notes receivable			20,000	
Accounts receivable			170,000	
Inventories:				
Raw materials	$100,000			
Goods-in-process	75,000			
Finished goods	75,000		250,000	$515,000
Unamortized discount on bonds				95,000
Capital assets:				
	Cost	Reserve for depreciation	Book value	
Land	$100,000		$100,000	
Building	1,050,250	$10,502	1,039,748	
Machinery	1,556,501	38,912	1,517,589	
	$2,706,751	$49,414	$2,657,337	2,657,337
				$3,267,337

Liabilities and net worth

Current liabilities:			
Accounts payable			$201,000
Notes payable to New York national bank *			500,000
Five-year, 7%, notes, dated January 1, 1925			500,000
First mortgage, 6%, twenty-year bonds			1,000,000
Net worth:			
Capital stock common, par $100		$1,000,000	
Surplus (exhibit "B")		66,337	1,066,337
			$3,267,337

*These notes may be renewed for a period in excess of one year, and hence are not considered as current liabilities.

No. 4 (23 points):

A manufacturing plant, operating to the date of negotiations relative to disposition, was acquired by a newly formed corporation, the price therefor being based on present sound values which were stated to be as follows:

	Present sound value	Age
Machinery	$116,500	4½ years
	26,300	4 "
	217,300	2½ "
	16,750	2 "
	57,550	1 year
Equipment	$13,300	6 years
	11,650	2 "
	27,660	1 year
Buildings—A	$285,700	12 years
A	15,000	5½ "
B	525,000	5 "
A	16,600	1 year

The estimated life of the machinery is ten years from date of original purchase; of equipment, fifteen years from date of purchase; of buildings A, thirty years and of buildings B, forty-five years.

It is desired to set up the assets on the books at present reproductive values, with a corresponding depreciation reserve to bring their net book value to the "sound values" given above. Compute the "reproductive value," the depreciation reserve, and give the future annual depreciation provision, all on the basis of a uniform rate each year until the book value is extinguished.

It may be assumed for the purpose of your answer that there will be no salvage value.

Solution:

The problem requires, first, the computation of the present reproductive values and the accumulated depreciation reserve. In meeting this requirement it appears necessary to assume that the appraisers first determined the reproductive values and then computed the sound values by the deduction of straight-line depreciation for the expired life of each asset.

For instance, the first item of machinery has a net sound value of $116,500. With an original estimated life of 10 years and an expired life of 4½ years, the asset would be 45 per cent. depreciated, and the sound value of $116,500 would represent 55 per cent. of reproductive value. Then, $116,500 ÷ 55% = $211,818. The table on page 144 completes the computation of reproductive values and the accumulated depreciation reserve.

The next requirement of the problem is the "future annual depreciation provision, all on the basis of a uniform rate each year, until the book value is extinguished." The uniform rate requirement is understood to mean a rate based on the composite life of all assets. In determining this rate it must be remembered that the assets are to be acquired by the newly formed corporation at their sound values, and the depreciation must be computed on such cost,

Computation of reproductive values and accumulated depreciation reserve

	Present sound value	Years estimated original life	Years expired life	Per cent. depreciated	Per cent. undepreciated	Replacement cost new	Depreciation per annum	Depreciation to date
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Machinery	$116,500	10	4½	45%	55%	$211,818	$21,182	$95,318
	26,300	10	4	40%	60%	43,833	4,383	17,533
	217,300	10	2½	25%	75%	289,733	28,973	72,433
	16,750	10	2	20%	80%	20,938	2,094	4,188
	57,550	10	1	10%	90%	63,944	6,394	6,394
Total machinery	$434,400					$630,266	$63,026	$195,866
Equipment	$13,300	15	6	40%	60%	$22,167	$1,478	$8,867
	11,650	15	2	13⅓%	86⅔%	13,442	896	1,792
	27,660	15	1	6⅔%	93⅓%	29,636	1,976	1,976
Total equipment	$52,610					$65,245	$4,350	$12,635
Buildings—A	$285,700	30	12	40%	60%	$476,167	$15,872	$190,467
A	15,000	30	5½	18⅓%	81⅔%	18,367	612	3,367
B	525,000	45	5	11⅛%	88⅞%	590,625	13,125	65,625
A	16,600	30	1	3⅓%	96⅔%	17,172	572	572
Total buildings	$842,300					$1,102,331	$30,181	$260,031
Total	$1,329,310					$1,797,842	$97,557	$468,532

The amounts shown in the several columns of the above statement were determined as follows:

(1), (2) and (3)—per problem.
(4) = (3) ÷ (2)
(5) = 100% − (4)
(6) = (1) ÷ (5)
(7) = (6) ÷ (2)
(8) = (7) × (3) and proved by (6) − (1).

and not on the gross reproductive value. Following is a computation of the depreciation provision and rate on a composite life basis:

Computation of depreciation rate and annual provision—composite life basis

Asset	Cost	Remaining life in years	Annual depreciation
Machinery	$116,500.00	5½	$21,181.82
	26,300.00	6	4,383.33
	217,300.00	7½	28,973.33
	16,750.00	8	2,093.75
	57,550.00	9	6,394.44
Equipment	13,300.00	9	1,477.78
	11,650.00	13	896.15
	27,660.00	14	1,975.71
Buildings—A	285,700.00	18	15,872.22
A	15,000.00	24½	612.24
B	525,000.00	40	13,125.00
A	16,600.00	29	572.41
Total	$1,329,310.00		$97,558.18

$97,558.18 ÷ $1,329,310.00 = 8.339%, rate to apply to sound value.
$97,558.18 ÷ $1,797,842.00 = 5.426%, rate to apply to replacement cost new.

No. 5 (23 points):

A city, with its fiscal year ending April 30th, prepares its budget and makes its tax levy for the subsequent fiscal year during March, taxes being payable on or after November 1st.

In consequence of a bond election held in June, 1915, bonds of $1,000,000 were issued dated August 1, 1915, due in 20 years. A sinking fund is to be provided, calculated on a basis of 4% compounded annually.

An audit having been made as of April 30, 1926, the balance in the sinking fund of $409,588.25 was found to differ from the actuarial requirements.

Calculate the correct amount which should have been in the fund and ascertain the annual adjustment necessary thereafter in order to meet the bonds at maturity, as the difference is to be spread over the subsequent levies and not provided for in the next levy only.

Presume that 4% interest will be earned in future, that all taxes are collected in full by the end of the fiscal year and that a deposit of the correct amount is made in the sinking fund annually on April 30th.

Given at 4%:

$v^8 = .7306902$ $(1+i)^8 = 1.3685690$
$v^9 = .7205867$ $(1+i)^9 = 1.4233118$
$v^{10} = .6755642$ $(1+i)^{10} = 1.4802443$
$(1+i)^{19} = 2.1068492$
$(1+i)^{20} = 2.1911231$
$(1+i)^{21} = 2.2787681$

Solution:

Although the bonds mature in 20 years from the date of issue, the city will not be able to make 20 contributions to the fund, and will not earn 19 years' interest on the fund. This fact is demonstrated by the following table of dates:

March, 1915. Levy fixed for year ended April 30, 1916.
August 1, 1915. Date of issue of bonds.

March, 1916. First levy which will include provision for sinking fund.
April 30, 1917. Date of first contribution to the fund.
August 1, 1935. Maturity of the bonds.
April 30, 1935. Date of last contribution to the fund.

This schedule of dates shows that annual sinking-fund contributions would be made on April 30, 1917 to 1935, inclusive, or a total of 19 contributions. Assuming that the fund accumulated at April 30, 1935, would earn 3 months' interest to August 1, 1935, or a quarter of a year's interest at 4 per cent., the fund at April 30, 1935, should be $1,000,000 ÷ 1.01, or $990,099.01. This sum should have been accumulated by 19 annual contributions, computed as follows:

Amount of 1 at 4% for 19 periods = 2.1068492
Compound interest = 1.1068492
Amount of annuity of 1 = 1.1068492 ÷ .04 = 27.67123
Annual contribution = $990,099.01 ÷ 27.67123 = $35,780.81

At April 30, 1926, ten contributions would have been made to the fund, and the amount which should have been in the fund is computed as follows:

Amount of 1 for 10 periods = 1.4802443
Compound interest = .4802443
Amount of annuity of 1 = .4802443 ÷ .04 = 12.0061075
Amount which should have been in the fund = $35,780.81 × 12.0061075 = $429,588.25

As the fund contained only $409,588.25 at April 30, 1926, there was a shortage of $20,000 at that date.

The next requirement of the problem is the annual adjustment required after April 30, 1926, or the difference between past levies for bond sinking fund, and future levies. The past levies are computed as follows:

$409,588.25 (amount in fund at April 30, 1926) ÷ 12.0061075 (amount of annuity of 1) = $34,114.99

Since, at April 30, 1926, the tax levy for the next year has already been fixed, it must be assumed that only $34,114.99 can be provided for deposit at April 30,1927, and that the first increased deposit will be made on April 30, 1928. The question then is, how much will the contributions at the old rate amount to at April 30, 1935, and how much must be provided by contributions at the new rate, beginning April 30, 1928?

Balance, April 30, 1926	$409,588.25
Interest at 4%	16,383.53
Contribution, April 30, 1927, at old rate	34,114.99
Balance, April 30, 1927	$460,086.77
Eight years' interest will be earned between April 30, 1927 and April 30, 1935. Hence multiply by amount of 1 at 4% for 8 periods	1.3685690

Amount accumulated at April 30, 1935, from contributions at old rate	$629,660.49
Amount required at April 30, 1935	$990,099.01
Amount accumulated from contributions at old rate	629,660.49
Amount to be provided from contributions at new rate	$360,438.52

Since the first increased contribution will be made April 30, 1928, eight such contributions will be made.

Amount of 1 for 8 periods = 1.3685690
Compound interest = .3685690
Amount of annuity of 1 = .3685690 ÷ .04 = 9.214225
Annual contribution at new rate = $360,438.52 ÷ 9.214225 = $39,117.62

New contribution	$39,117.62
Old contribution	34,114.99
Adjustment, effective April 30, 1928	$5,002.63

Proof

April 30th		Amount
1926	Balance	$409,588.25
1927	Interest	16,383.53
	Contribution	34,114.99
	Total	$460,086.77
1928	Interest	18,403.47
	Contribution	39,117.62
	Total	$517,607.86
1929	Interest	20,704.31
	Contribution	39,117.62
	Total	$577,429.79
1930	Interest	23,097.19
	Contribution	39,117.62
	Total	$639,644.60
1931	Interest	25,585.78
	Contribution	39,117.62
	Total	$704,348.00
1932	Interest	28,173.92
	Contribution	39,117.62
	Total	$771,639.54

1933	Interest	$30,865.58
	Contribution	39,117.62
	Total	$841,622.74
1934	Interest	33,664.91
	Contribution	39,117.62
	Total	$914,405.27
1935	Interest	36,576.21
	Contribution	39,117.62
	Total	$990,099.10
August 1st—Interest, 1%		9,900.99
Total		$1,000,000.09