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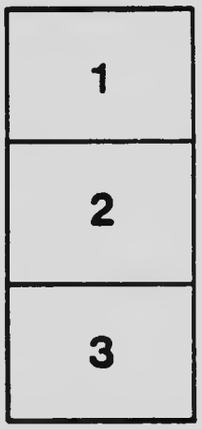

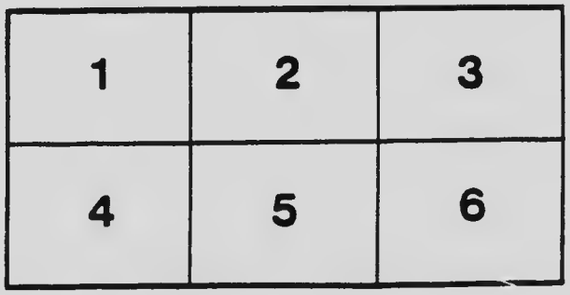

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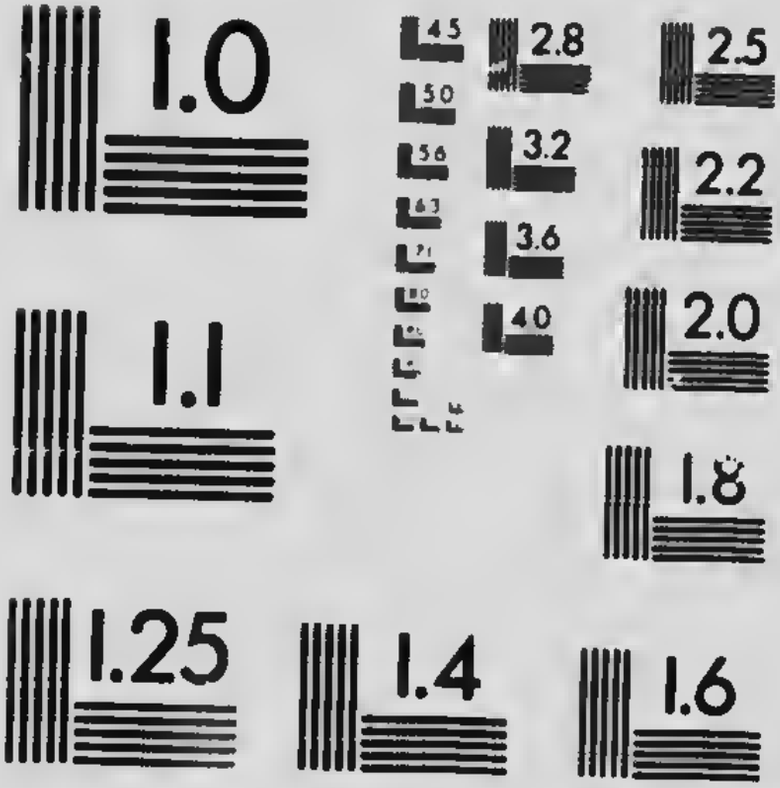

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Book Keeping and Auditing

BY

O. J. GODFREY, F.C.A.

(Past President of the Dominion Association of Chartered Accountants)

Eleanor Bujer

VOLUME II

LARGE TOWNS AND CITIES, THEIR BOOKS, FINANCES AND BALANCE SHEETS.

THE CARSWELL CO. LTD.
TORONTO

TO

The Honourable George Langley

MINISTER OF MUNICIPAL AFFAIRS

FOR

THE PROVINCE OF SASKATCHEWAN

This work is dedicated by its author, who is proud to feel and know that Municipal Government in Saskatchewan is on a higher plane than in any other province of the Dominion of Canada, and who also realizes that this happy state of affairs is almost entirely due to the wise guidance and supervision exercised by the Department over which he to whom this book is inscribed, presides.

INDIAN HEAD, SASK.

DECEMBER, 1920.

VOL. II.

This volume has been prepared with a view to setting out in concrete form the principles underlying the proper accounting for Urban Municipalities of sufficient size to operate their own public utilities.

There is very little difference in these principles from those which govern the accounting of mercantile corporations. In the former, however, service and not profit should be the object of those administering affairs.

In the following pages, demonstration sets of accounts have been prepared in skeleton and worked out. Criticism of each set has been made with the object of explaining where the weak points in municipal balance sheets and accounts should be looked for.

Many disputed and debated principles are discussed, and even if the reader does not agree with all the decisions arrived at, he will at least know that he has seen both sides of the question.

[illegible]ledgement is made of material used and points [illegible] various practising accountants in published re[illegible] the finances of various American and Canadian cities.

Indian Head, Sask.,
1921.

O. J. Godfrey.

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PART II

URBAN MUNICIPALITIES

CHAPTER I

ESTIMATES OR APPROPRIATIONS

Estimates, or Appropriations, are practically the budget of a city, and no part of the duty of the city council should be given more attention. Careless estimating leads to endless trouble, as municipal officials of experience know to their cost.

Eggleston says "When properly set up it (the budget) "gives a complete view of the things which the city pro-"poses to do for the coming year, and from an accounting "point of view, affords the most satisfactory method yet "found of gaining control of municipal expenditures."

This is true so far as it goes, but it should be made to be equally true of the public point of view. In other words, no expenditure should be made which exceeds the appropriated fund therefor, without explicit sanction from the council, and moreover, the council should so legislate that this must be the case without exception.

In government circles, no expenditure in excess of an appropriation may be made without a "warrant" which is an order-in-council, and such warrants are met, first out of surplus revenues when available, or in the alternative are made a charge upon the next succeeding budget.

Dr. Horace L. Brittain, of the Toronto Bureau of Municipal Research, some years ago wrote the following in the "Canadian Chartered Accountant," which covers the theory of budget making very fully. He goes further than most cities do in the amount of information supplied, but this is on the right side, and although it cannot be expected that all will agree with him in everything he says, the subject matter of the article is so good, that no apology is needed for its reproduction here.

WHAT IS A CITY BUDGET?

By Dr. Horace L. Brittain,
Director, Toronto Bureau of Municipal Research.

"Wherever people live in groups it has been found that "some things can be done better conjointly than severally. "Governments are merely committees of the people charged "with the performance of such work. A city government, "then, is a committee of citizens elected for the purpose of "doing things which can be done better by the citizens as "a city corporation than by citizens as individuals. Ob-"viously the first duties of such a committee, either through "a sub-committee or otherwise, are to:—

"1. Decide what work needs to be done during a given "year.

"2. Determine the extent of the city's resources avail-"able for the year's work.

"3. Eliminate for this year, if necessary, work, the non-"performance of which will cause the least incon-"venience and will not lead to permanent loss.

"4. Draw up a detailed statement of the work to be "done, together with a statement of how the funds "are to be provided.

"5. Authorize the doing of the work by the executive "departments and vote the necessary funds.

"These are the essential steps in budget-making. The "result is a city budget, which is simply a concrete expres-"sion of the city's needs for a definite term, accompanied "by the provision of the means for meeting those needs.

"If the city were entering upon its first year of life, "statements conformable to these five steps would be the "only statements necessary in the official budget to give sig-"nificant information to the city's legislative authorities, "the city's executive officers and the city's taxpayers.

"As a matter of fact, however, most cities have had a "history covering years of life as a city. A summary of "past conditions is, therefore, necessary in order that all

"concerned may be able to judge the adequacy and practicability of the proposals for the year.

"Granting an organization like that of Toronto, with a "Council and Board of Control, the draft estimates or tentative budget submitted to Council by the Board of Control should contain:—

"1. A brief explanatory statement by the Mayor and "Board of Control concerning the plans submitted "and proposed methods of raising the necessary "funds.

"2. A series of *comparative* summary financial statements, namely:—

"(a) A Balance Sheet.

"(b) An Operation Account.

"(c) A Surplus Account.

"(d) A Comparative Fund Balance Sheet (current "fund, loan fund, trust funds, sinking fund.)

"(e) A Debt Statement.

"3. Summaries of Estimates, namely:—

"(a) A comparative summary of actual past and "estimated future revenues.

"(b) A comparative summary of actual and estimated expenditures classified by:—

"1. Organization units and functions "(work programme).

"2. Organization units and character of "expenditure, (Expenses, fixed charges "etc.)

"3. Organization units and objects of expenditure.

"(c) Statement of additions to and deductions "from departmental estimates effected by the "Mayor and Board of Control.

"It is evident that all these pieces of classified information are necessary for an intelligent discussion of the proposed budget by the members of Council and for clear "thinking by the people who pay the bills. It probably "would be admitted by all authorities that if budget-makers

"and taxpayers had had this information during the last "few years great savings in capital and current expendi- "tures would have been effected and actual expenditures "would have been more effectively applied.

"It is coming to be recognized more and more that the "stability and efficiency of democratic government depends "on the standard of *enlightened* intelligence among the "people. Budget-making is one field in which enlighten- "ment should be provided by our governors, who are really "our servants. Entirely outside of the fact that informed "and convinced taxpayers are more apt to be ungrudging "taxpayers, the people who pay the bills have a right to "know—

"1. How their money has been spent and with what "results;

"2. How it is proposed to spend their money and for "what purposes.

"With this end in view, not only should financial and "work reports be made after the fact at frequent intervals, "but statements of proposed expenditure should be scatter- "ed broadcast through the agency of the press and by the "distribution of printed summaries to be sent to all citizens' "organizations and placed in buildings of public resort, "such as post-offices and drug stores, with invitations to "the public to take away copies. The participation of the "rank and file of those who pay the bills should be secured "by holding hearings to which representatives of citizen "organizations and citizens generally would be invited. "These should be hearings in which the city fathers did the "hearing and taxpayers did the talking. Perhaps the "clearest idea of the proposed procedure will be given by "listing in concrete form the actual steps in public budget- "making:—

"Sept. 15—Departmental chiefs directed by Council to "prepare estimates for the succeeding year to be sub- "mitted to the Board of Control by December 1st.

"Nov. 15—Beginning of continuous public hearings on "departmental estimates, presided over by the "Mayor.

"Dec. 1—Submission to Council by the Mayor and Board

"of Control of tentative budget representing their "policy as to next year's program.

"Dec. 1 to 10—Discussion of tentative budget by Council. "allowing for hearings of deputations and individ- "uals.

"Dec. 20—Passing of the tentative budget, subject to "action of next year's council.

"Jan. 1—Election of incoming Mayor, Board of Control "and Council after a campaign in which the coming "year's program of work and financing should be "the leading feature.

"Jan. 2—Further discussion of budget by council.

"Jan. 14—Passing of the budget.

"Feb. 14—Payment of first instalment of taxes.

"It is apparent that the following advantages would result from such procedure:—

"1. The city's policy would be determined by the city's "needs and resources, not by needs or lack of re- "sources of certain local special interests.

"2. Budget discussions would turn on impersonal facts, "not on biased personal theories.

"3. Elections would tend to turn on policies for making "cities better places in which to live and not on "personalities

"4. More people would know what they were paying "taxes for through a regular avenue for budget-mak- "ing co-operation.

"5. The small taxpayer would be put on a more equal "footing with the large taxpayer, who can afford to "pay to have a representative at the City Hall.

"6. The whole city's programme would come to be settled "by the whole city."

It is very evident that classification must of necessity be a prime factor in the preparation of satisfactory estimates. It is also plain that whatever classification is decided on must of necessity govern the classification of accounts in the ledgers of the city. The following will be accepted as a sound classification for an average city owning its own utilities.

REVENUE ACCOUNT

EXPENDITURES		REVENUE
Deficit from previous year, if any		Surplus from previous year, if any
Departments.		
Commissioners	Salaries Printing and Stationery Furniture Auto Maintenance Postages, Telegrams and Telephones Sundries Less amount charged to Utilities	
City Clerk	Salaries Printing and Stationery Advertising Furniture Postages, Telegrams and Telephones Election Expenses By-Laws and Plebiscites Voters' Lists	
City Treasurer	Salaries Printing, Stationery, etc. Postages, Telegrams, etc. Furniture Sundries Less charged to Utilities	

Assessor	Salaries Printing and Stationery, Postages Furniture Auto Maintenance Searches Sundry		Tax Certificate Fees Searches
Auditors	Fees		
Comptroller	Salaries Printing and Stationery Furniture Postages, Telegrams, Telephones Sundries Less amount charged to Utilities		
City Solicitor	Salaries Printing, Stationery, Forms, etc. Postages, Telegrams, etc. Searches Transportation Law Costs Library Sundries		Costs received

City Engineer	Salaries Printing, Stationery, etc. Auto Maintenance Instruments Furniture Transportation Postages, Telegrams and Telephones Sundries Less amount charged to Capital		
Wiring Inspection	Salaries Printing and Stationery Postages, etc. Instruments Maintenance of Equipment	Wiring Permit Fees	
Plumbing Inspection	Salaries Printing and Stationery A 'vertising Motors Maintenance Sundries	Inspection Fees Fines for Infractions	
Public Works	Salaries Printing and Stationery Postages, Telegrams, etc. Transportation Autos Maintenance Grading Sidewalk Repairs and Maintenance Pavement Repairs and Maintenance		

Public Works (cont'd)	Crossing Repairs and Maintenance	
	Bridge Repairs and Maintenance	
	Plant and Equipment Maintenance	
	Horses, Feed, etc.	
	Stable Account	
	Depreciation on Equipment	
	Sundries	
	Sewers Maintenance	
	Salaries and Wages	
	Materials	
	Tools and Maintenance	
	Stable Account	
	Plant and Equipment	
	Water for flushing	
	Damages	
	Catch Basins and Maintenance	
	Connection repairs	
	Depreciation on Equipment	
	Pavement Repairs	
	Street Cleaning	
	Salaries and Wages	
	Transportation	
	Auto Sprinklers Maintenance	
	Stable Maintenance	
	Plant Maintenance	
	Water	
	Snow Removal	
	Horse Hire	
	Depreciation	
	Sundries	

Parks and Cemeteries	Maintenance Greenhouse	
	Cemetery	Cemetery Lot Sales
	1	Maintenance of Lots—Fees
	2	
	Parks 3	
	4	
	5	
	6	
	City Hall Grounds	
	Boulevards	
	Trees	
	Rinks	
	Tools and Equipment	
	Horse Hire	
	Water	
	Salaries	
	Printing and Stationery	
	Advertising	
	Postages, Telegrams and Telephones	
	Office Expense	
	Transportation	
	Stables account	
	Depreciation on Equipment	
Fire Department	Salaries	
	Printing and Stationery	
	Fuel	
	Postages, Telegrams and Telephones	
	Light and Water for Halls	
	Furniture	

Fire Department cont'd.	Clothing Stable Account Autos' Maintenance Fire Alarm System Maintenance Plant and Equipment Maintenance Buildings Maintenance Water Acids Depreciation on Horses		
Labour Bureau	Salaries Printing and Stationery Postages, Telegrams, etc. Transportation Sundries	Fees	
Street Lighting	Arc Circuit Ornamental Circuit Nitrogens Tungstens Miscellaneous		
Building Inspector	Depreciation on horses Salaries Printing and Stationery, Postages Furniture Stable account Sundries	Building Permit Fees Fines for Infraction of Building By-Law	

Police	Salaries Uniforms Printing and Stationery Advertising Postages, Telegrams and Telephones Stations Maintenance Transportation Fuel and Light Water Prisoners' Meals Patrols Maintenance Autos Maintenance Equipment Maintenance Buildings Repairs Secret Service Relief Sundries Depreciation on Equipment	Fines Refunds Dog Licenses	
License	Salaries Printing and Stationery Tags Sundries Transportation	Sundry Licenses	
Health	Incinerators School Inspection Milk Inspection Scavengers Wages Stable Account Disinfectants	Drainage Permits Ambulance Fees Incinerator Sales	

Health (con't)	Repairs—Plant and Equipment Depreciation—Plant and Equipment Clothing Inspectors' Salaries Office Salaries Printing and Stationery Postages, Telegrams and Telephones Furniture Autos' Maintenance Ambulance Maintenance Sundries			
Laboratory	Salaries Printing and Stationery Postages, Telegrams, etc. Office Furniture Chemicals and Apparatus Sundries		Private analysis fees	
Markets	**Scales** Salaries Printing, etc. Fuel and Light Maintenance		Scales Fees	
	Markets Salaries Printing, etc. Light and Fuel Water Power Advertising Equipment Maintenance Repairs to Buildings Sundries		Market Fees Rents	

Markets cont'd.	Pounds Salaries Advertising Supplies Feed Maintenance		Pound Fees Feed Refunds	
City Hall	Salaries Fuel Light Water Power Supplies Sundries		Auditorium Rentals	
	Bank interest and discount Bond Sales Cost Insurance Contingencies Tax Discounts		Interest on arrears of taxes General rents Sundry Revenues	
Debenture Charges	Sinking Fund Debenture Principal Debenture Interest			
	Less Local Improvement Taxes			
Total Estimated General Current Expenditure			Amount to be raised by general taxation	

It will be seen from the foregoing estimates that the city is supposed to allow surpluses or deficits to be carried in the utility accounts.

It will also be noticed that schools, libraries, hospitals, and kindred institutions supported from taxes, are given no place in the budget. This is because they should be looked upon as separate entities, and their tax levies retained for their sole use and benefit.

To go through the process of estimating on current account for the utilities in this list would take up more space than is justified when, by reference to the chapters on utilities the classification of accounts can be readily ascertained. It must be realized, however, that a budget for utilities is just as imperative as a budget for general purposes.

When the estimates are finally passed by the council, they should be set up in the ledgers of the city. How this is accomplished will be set forth in other chapters.

The assessment of the city is a corollary of the utmost importance to the budget, and should be available at the same time. The completion of the budget and assessment is a pre-requisite to all the other accounting work of the year.

CHAPTER II.

THE TREASURY.

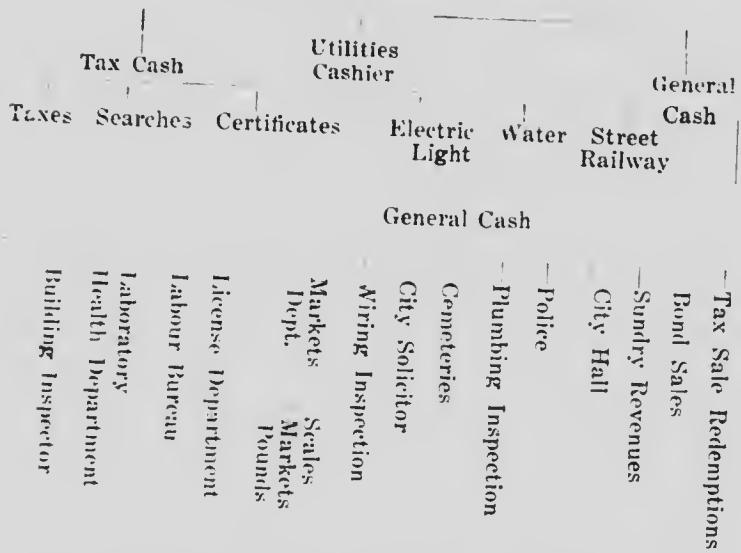
INCOME

The department of the city with which anyone studying city bookkeeping and auditing is most concerned, is that of the city treasurer.

This department has to be in touch with every other department of the city, inasmuch as upon it devolves the receipt and disbursement of all city funds, together with the proper accounting thereof.

Let us first study the sources from which it is expected to receive income. The undermentioned chart will probably show better than a verbal description.

CITY TREASURER'S OFFICE



The tax department is nearly always a part of the assessment department, and the city treasurer has nothing to do with this but account for the moneys received to be applied

on tax levies, and to receive from that department the necessary information to enable him to properly record cancellations, discounts, etc., in such manner that the Taxes account in the general ledger controlling account agrees with the tax rolls. The duty of the assessor's department is to see that this is the case, but very few cities are able to produce an exact balance in actual practice.

The treasurer is usually charged with the duty of holding tax sale, and of receiving moneys on this account. The more logical official to perform this duty is the assessor or tax collector.

The work in connection with the collection of income from utilities comprises a very great proportion of the total work of the city treasurer's department where each utility does not do its own billing and collecting.

Bookkeeping machines and addressographs have reduced the clerical work in sending out the monthly bills very considerably, but they cannot do the same in respect of collections, for here the individual ratepayer comes in.

Let us just take a cursory glance at the work entailed by billing for electric light accounts where probably ten or twenty thousand have to be sent out monthly.

The initial information comes from the meter readers, who should be a part of the staff of the treasury in every case. They should read water and light meters at the same time and work in such manner that the city is so divided for their purposes that every meter is read monthly. It is further desirable that the city be divided into billing sections, in such manner that billing and collecting may be spread over the month something as follows:

District	Meters read	Billed	Last date for payment.
A	18th to 28	30th	10th prox.
B	29th ult to 9th prox.	10th	20th prox.
C	10th to 18th	20th	30th

Under a plan of this sort the meter readers are kept

busy, the billing machine clerks have a couple of days to get out their bills, and the cashier has his dates spread over instead of bunched.

The form of bill used cannot be too simple, and it is made out and recorded on the "account register" in one and the same operation in most cases. Some cities prefer the account register to be written up from the triplicate bills supplied by the billing machine operators, after the originals and duplicates have been mailed to the consumers.

Consumers must be notified and educated to the fact that it is imperative that they should send or bring their bills when making payment. A cash penalty on each ratepayer who omits to perform his part in this respect has been adopted in some cities with success.

Payments to the cashier require the retention of the receipted bill by the consumer, the retention of the duplicate by the cashier, who, when his cash is turned in each day, also turns these duplicatess in. They are then handed to the billi ıg clerks or whoever keeps the account registers, for entry.

Discounts must be very carefully checked so that the total of accounts settled always agree with the

Receipts
Discounts } when totalled.
Arrears

One of the meter readers in each division generally acts as "turner on or off," and his records must be very accurately kept.

When turning on current for a new consumer, the date, meter number and capacity must be given, and when turning off, the meter must be returned to stores, and properly recorded.

Forms of account registers vary in different cities, according to whether kept by bookkeeping machines or not. For a small city, a form somewhat on either of the following lines is suitable.

ELECTRIC LIGHT ACCOUNTS FOR 19 .

No.	Name	Particulars of Sales				Meter Rent	Arrears	Sundries	Total	Cash Received	Arrears	Discount lost
		Gross	Rate of Discount	Discount	Net							
		$ c	%	$ c	$ c	$ c	$ c	$ c	$ c	$ c	$ c	$ c
1	R. Elliott	5 20	25	1 30	3 90	25			4 15	4 15		
2	J. Heathcote	3 90	25	97	2 93	25			3 18		3 18	
3	T. Grant	40 20	40	16 08	24 12	50			24 62	24 62		
4	E. Brooks	3 00	25	75	2 25	25	4 60		7 10		7 10	
5	D. McKay	6 10	25	1 60	4 80	25		75	5 80	5 80		

ELECTRIC LIGHT REGISTER

No.	Name	St.	JANUARY							FEBRUARY						
			Brt Fwd	Current	Meter	Total	Cash	Discount	Unpaid	Brt Fwd	Current	Meter	Total	Cash	Discount	Unpaid

N.B.—Whilst this illustration only shows two months' transactions, it is assumed that the reader will understand that the other ten months are ruled for, but space does not permit of their reproduction here.

The total earnings for each month must be credited to Electric Light earnings or Waterworks earnings each rendition, and charged to Accounts Receivable under whichever heading is affected. Payments will be credited to the latter, as also will discounts, cancellations, etc.

The total at the debit of the controlling accounts for these purposes must at all times agree with the summaries of the accounts registers.

Street Railway cash will come in daily in one sum, but this subject will be covered in the chapter on street railway accounts.

There is not much to explain in connection with revenues received from other departments shown on the chart, but the student will understand that the treasurer should not rely upon the auditor to do all the detail checking. A transaction checked at the time is much less prone to cause trouble than one checked months afterwards. A cashier receiving money from the License Department for instance, should be furnished with a list of the licenses they represent. If the payment is for fines, the same applies, and so in all similar cases.

Now let us devote a little time to the class of man fitted to be a treasurer of a city municipality.

Many cities have learned by bitter experience that a man who is reputed to be a good bookkeeper is not good enough to be their treasurer. A case occurs to memory where the books were absolutely faultless, yet the city was losing money hand over fist in bad debts for utility services. This was because the treasurer thought more of his books than enforcing collections, and he was too good a fellow to hurt people's feelings by cutting off their supplies. The weakness being discovered, he was replaced by a man from another city, where he had been acting as utilities cashier.

On taking office he sent out a notice to the effect that from that date all utility services in arrears at the expiration of seven days would be discontinued without notice.

and that thereafter the city by-laws in that respect would be strictly enforced.

He did it, sat tight,and said nothing.

Some aldermen were caught—wanted him fired and so on—*BUT*

He sat tight and said nothing.

In consequence, he was maligned right and left for some time, but when at the end of the year his bad debts were in multiples of ten instead of thousands, he got his justification, and is today looked on as a most capable and efficient official, which is reflected by his salary.

But a thorough knowledge of finance, which includes the ability to read the bonds and money markets, is essential to the qualifications of a good city treasurer if he is to be the help to his Board of Control or Commissioners he should be.

He must also thoroughly understand the civic machinery, and be sufficient of an efficiency engineer to know where money is being wasted, so that he can advise on this point when asked.

The city is indeed fortunate which possesses a treasurer with these qualifications, coupled with that firmness necessary to enable him to refuse to make fish of a large and influential ratepayer, and fry of a labouring man.

A public servant owes just as much to a Roumanian Buck Navvy as he does to the owner of the highest skyscraper, and a good one will act on this theory.

CHAPTER III.

THE TREASURY (continued)

Expenditure

The proper recording of civic expenditure is a much more complicated matter than recording revenues. Its requirements vary tremendously with the size of the city. A small city, for instance, can have a voucher register containing columns for all its classes of expenditure which yet need not be of inordinate size. Such a book is impossible, however, when the classification of expenditures runs, as it often does, to hundreds of headings.

The dissection of capital from revenue expenditure in cities requires special treatment, and the system proposed to be outlined in this chapter is largely used. When it is more thoroughly understood, it will most probably become the standard, unless in the meantime a better and more simple system is devised.

In addition to the cash transactions, in order to properly record expenditure, whether actual or incurred, we need

a Voucher Journal
a Voucher Record.

There is no difference in the manner of treating entries in the voucher journal to what is necessary for an ordinary journal. The difference is in the name. The object of this book is to ensure no entries being made except from a voucher, a specimen of which will be found in Form I at the end of this chapter. It will be seen that provision is made for authorization by the proper officer, usually the treasurer, and for the approval of the auditor. The details on the voucher need not necessarily be transcribed into the journal, but cross reference is very necessary. Thus the journal should show the voucher number and the voucher the journal folio. The reader should be careful not to confuse the journal voucher with the ordinary voucher. The

former is merely a form of transferring debits and credits, and the latter for the approval of payments.

In some cities, in order to avoid confusion between the voucher journal and the voucher record, the former is termed the general journal. Either term is correct, and the latter is preferable.

A ruling of this book will be found in Form 2 at the end of this chapter.

There is not much to explain about it except that the whole idea is to separate capital from revenue, and to enable the recording of earnings from taxes, utilities and other sources to be properly made.

Take a tax levy as an example. The journal voucher would show a debit to taxes receivable, and credits to the general revenue of the city, the school boards, hospitals, library and so forth. The General Fund revenue accounts are the only ones affected in this instance.

Electric light earnings would only affect the revenue accounts of that utility, and would comprise a debit to accounts receivable, and a credit to earnings. Discounts would be a debit to discounts (where separated) and a credit to accounts receivable

If it was found that in the voucher record, a purchase had been charged to capital which should have been on account of revenue, before the cheque had been issued in payment, the matter would be corrected through the journal. If, however, the cheque had been issued on revenue account, it would be necessary to refund revenue by means of a capital cheque, in addition to the journal entry mentioned.

The journal should be totalled monthly to see that debits and credits agree, but no footing need be transferred to the general ledger.

No entry from the General Journal should ever be made to any book but the general ledger. Subsidiary books such as electric light receivables, general accounts receivable, accounts payable and so on, should be adjusted according to the voucher before the general ledger posting is made to their respective controlling accounts.

Turning to the voucher record, every expense incurred should be put through this book. This statement is not concurred in by all accountants some of whom hold that such direct expense as salaries, should only be put through the cash book. The argument in favor of this idea is saving clerical work. The argument against it is the absolute proof of correctness that can be obtained quickly every month by the following test:

Accounts payable at Commencement	
Plus liabilities incurred	
	_____
Less Payments	
	_____
Represents accounts unpaid at closing	
	_____

No entry in the voucher record should be made except from a voucher, which in itself is an authorization. A specimen form is exhibited in No. 3 at the end of this chapter.

This form requires some explanation in that its wording gives no clue to its purpose.

Example may be taken in respect of a payroll. The form will be headed:

To Payroll as per Time Sheet Attached.

1920	Services		
August 31	Parks Maintenance	100.00	
	Street cleaning	300.00	
	Cement walk repairs	200.00	
	Cement walk construction .	2000.00	
	Street repairs	300.00	
		2,900.00	
	Bank Accounts:		
	Capital		2,000.00
	Revenue		900.00

The receipt will be signed by the paymaster, who will have the amount placed to his credit as agent of the city in the payroll bank account.

On the reverse side of the voucher the accounts will be listed as on the original in this case, and from it the entries

are made in the voucher record, as explained later. The specimen form is filled in on both sides.

Accounts for goods purchased should be made out on voucher forms, crediting accounts payable and debiting stores. The storekeeper's distribution of goods will go through the voucher journal, charging the respective works or departments.

Debenture coupons will be charged to coupon account and credited to accounts payable under this system.

It will be realized that interdepartmental charges cannot go through the voucher record. For instance, in the first place, all salaries in the treasury should be charged to the treasury initially. Later, each department served by the treasury will be charged and the treasury credited through the journal with its proportion of service rendered. The same applies to other departments.

Then with regard to such services as street lighting, hydrant rents, and so on. Where each utility has its own bank account on revenue, transfer cheques should be issued, and be put through the voucher record. Where such is not the case, the voucher journal may be called into use, and the utility credited and general revenue debited with the charge.

A ruling of a voucher record will be found in Form 4 following this chapter.

The original double entry purpose is fulfilled by the individual posting of items to various capital or revenue expenditure, and crediting them in total to accounts payable, —capital or revenue as the case may be. The accounts payable subsidiary ledger will be posted in detail from the voucher record.

Having decided upon the best way to handle expenditure as incurred, we now have to examine how the actual payments on account of liabilities are recorded.

The voucher register provides for Capital and Revenue bank accounts. In consequence, the cash book must do the same.

It is incorrect in theory for a capital bank account ever

to be overdrawn. In practice, however, it is often found to be the case because of delayed sales of bonds, under estimates of costs by engineers and for various other reasons. In such cases, revenue has to lend to the capital bank account unless the banks will agree to the overdraft on security of unsold bonds or similar security.

On the other hand, we often find that owing to uncollected or uncollectible taxes, the reverse obtains, and revenue uses capital moneys—a very wrong thing—but unfortunately quite common.

We will leave these two matters for the time being, and find out how the book is run under normal conditions, when funds are available for both capital and revenue expenditure.

The book will be ruled so as to provide for:

Capital Bank Account	Deposits
	Withdrawals
Current Bank Account	Deposits
	Withdrawals

The difference between the two columns in each case should ordinarily represent the balance to the credit or debit of each account, assuming all cheques are paid.

Most cities have other columns under each heading, providing for dissection between accounts and bills payable, the latter being on bank bills only. This may be carried still further if the voucher register is so designed as to segregate accounts payable into wages payable, and so on. Local conditions, however, must govern the need for this.

There is very little posting to be done to the general ledger from the cash book, as generally the cash book, not the ledger, constitutes the bank account. In other words, the ledger is not self-balancing without the bank balances from the cash book.

The footings of the bills and accounts payable columns

are posted to the controlling accounts in the general ledger and the details posted in the subsidiary ledgers.

Now we come to what happens in case capital is overspent, and revenue is called on. The ideal way of handling this situation is for revenue bank account to issue a cheque in favor of capital, but this is not always possible. Where it is, however, the receipt on capital is posted to the credit of "Due to Revenue Account," and the expenditure from revenue to the debit of "Due by Capital" account.

More often than not, however, revenue merely pays capital's debts in such case, and the adjustment between capital and revenue is made by a journal entry, which represents the total so advanced, adjusting matters between capital and revenue.

In case the situation is the opposite way, and revenue is using capital moneys, the treatment of the accounts is reversed.

The same series of cheques is generally used for capital and revenue, a distinguishing stamp "Capital" or "Revenue" being affixed to the cheques for the guidance of the bank. Needless to say, the same information should appear on the cheque stubs.

The foregoing is an outline of the so-called double-account system, as applied to municipal accounting. It will be realized that it is only ordinary double entry after all, and that the same result can be obtained by other methods of double entry bookkeeping, but that it simplifies the work.

The great danger, as is emphasized more than once in this volume, is charging capital with expenditures properly belonging to revenue. This point need not be laboured further, if its danger be properly appreciated.

A factor in this system which is often thought to be confusing, is the creation of capital assets from revenue.

It would seem to the uninitiated that by charging the expenditure to capital and creating revenue accounts payable, all that is necessary has been done. This is not the case at all.

An expenditure such as this should be charged to revenue, not to capital, and credited to revenue accounts payable. The correcting entry should be made through the journal, debiting the capital asset and crediting revenue with a donation.

The reason for this is that funds have been provided for the creation of the asset, in the current budget. Unless this procedure is followed, no charge on this account will have been made to revenue, and this is absolutely necessary, or revenue will show a fictitious surplus.

The same is true of sinking fund deposits and debenture repayments. In the first place, they are a charge to revenue, and in the second, they reduce a capital liability. Consequently, in the voucher record, they are charged to revenue and credited to revenue accounts payable. There is a slight difference in the adjustment of the capital liability in that in the case of redemptions the liability is debited, and the depreciation reserve credited. Where [illegible]g funds are concerned, the accumulation must a[illegible] [illegible]aken into account.

The objection is sometimes raised that the system under discussion creates a tremendous amount of detail posting in the general ledger. This objection is well founded so far as it goes, but it is offset by the amount of information provided. So far no more satisfactory system has been discovered.

The amount of detail posting can be kept down by correct entries in the first place, which obviate to a considerable extent, remedial entries through the journal.

When once thoroughly grasped, those in charge of this system become its most ardent supporters.

FORM I.

CITY OF .....

Journal Voucher

No. ..... Date ....

	Dr.	Cr.
Taxes Receivable	460843 26	
General Tax Levy		209283 98
Public Schools Demand		170031 07
Do Provns. for Discounts		12000 00
Separate School Demands		12132 96
Do Provision for Discounts		249 97
Government Taxes		11229 22
Frontage Taxes—General		21108 28
Do —Waterworks ...		21807 78
		460843 26

REMARKS

Tax Levy, 1920

Authorized by	Audited	Journal Folio
Sam Smith Treasurer	T. Checkem	127

Form 2

City of .....

GENERAL (or Voucher Journal)

Date 19	Particulars	Transfer Ch. No.	Vchr. No.	Fo.	Gen. Fd. Revenue		E. L. & Pow. Rev.		Street Ry. Revenue		Waterwks. Revenue		Gen. Fd. Capital		E. L. & Power Capital		Street Ry. Capital		Waterwks. Capital		Ledger Adj'ments	
					Dr.	Cr.	Dr.	Cr.	Dr.	Cr.	Dr.	Cr.	Dr.	Cr.	Dr.	Cr.	Dr.	Cr.	Dr.	Cr.	Dr	

Form 3

SPECIMEN VOUCHER AUTHORIZING PAYMENT.

Reverse Side

FOLD

FOLD

Voucher No. 1111
Cheque No. 2222

CITY
of

$1625.00

Month of DECEMBER, 1920.

Approved.
TICKEM & Co.
City Auditor.

Apportionment of Account	
E. L. Capital	1500 00
" Stores	125 00
	1625 00

CITY OF

No. 1111

To JOHN JONES
WINNIPEG

DR.

Date 1920		SERVICES	AMOUNT	
Nov.	6	New Transformers	$1500	00
		Wire for Repairs	125	00
		As per detailed account hereto attached	$1625	00

Passed for payment by Council
19

Capital Bank Ac.	1500	00
Current Bank Ac.	125	00

RECEIVED from the City of the sum of One Thousand Six Hundred and Twenty-five Dollars $ (1625.00).
Dec. 7th, 1920.

JOHN JONES.

City Auditor.

1625 00

Form 4

City of.....

VOUCHER RECORD.

Date 19	Name	Chq No.	Vchr. No.	Fo.	Accounts Payable		Name of Account to Be Charg'd		General Fund			Electric Light and Power			Street Railway			Waterworks		
					Cap.	Rev.		Fo.	Cap.	Rev.	St'es	Cap.	Rev.	St'es	Cap.	Rev.	St'es	Cap.	Rev.	St'es

CHAPTER IV.

STORES ACCOUNTS

An indispensible feature of a well-regulated city accounting system is a proper stores department.

Stores may be divided into several sections, as, for instance, street railway, electric light, waterworks, general, with often subsections of the latter according to the size of the city, comprising works, health, and so forth. Again, in the opinion of many, each section needs subdivisions as between capital and revenue.

All should, however, be under the direction of a central stores department and the selection of a man capable of performing the duties of chief storekeeper is of great importance.

Large cities, following the lead of the large mercantile corporations, now take the view that a purchasing agent who knows his business is one of the most valuable cogs in the whole machinery. To-day, a purchasing agent finds his duties vastly different to what they were a few years ago, when his main function was price cutting, as supply of most commodities then exceeded demand, whereas today the reverse is the case, and the purchasing agent has to devote a large moiety of his time to finding out where he can procure the supplies his employers need.

But we are not discussing purchasing agents, and will confine our attention to stores and storekeeping accounts.

Reverting to the statement that there are two kinds of stores, capital and revenue, a few words of explanation may with advantage be given, so that the reader may be the better able to follow later subject matter.

The city storehouse and yards will always be found to contain a large amount of material properly chargeable to bylaw expenditures. Take, for instance, sewer pipe, water mains, and so forth. These every city has a supply of,

caused by taking advantage of car lot rates, or other advantageous circumstances surrounding their acquisition. Therefore, and in some cities the supply of these commodities must run to hundreds of thousands of dollars, it would seem that the necessary funds for the financing of these assets should be provided from capital account. The City of Edmonton separates capital stores from revenue stores in its balance sheet, and quite rightly.

Current stores represent a large proportion of working capital required by a city, but we very seldom find any provision made for this phase of municipal finance. It should be made, however, as otherwise the current account of a city is naturally at a disadvantage. The cities of Saskatchewan have in recent years been given power to amass a fund for use as working capital, and the inability to properly finance current stores was undoubtedly one of the main reasons which led the cities to ask the government for this legislation.

Cities of sufficient size have special departments of stores at the headquarters of their waterworks, electric light and street railway departments, which is as it should be. The city as a whole has no right to finance stores departments for revenue earning utilities.

In such cases, an employee of the department, whether light, water, or street railway, is made the agent of the head storekeeper, where there is not enough work to keep a man doing nothing else.

Let us take a rough survey of what happens in the storekeepers department at an electric light plant in a fair sized city.

Fuel comes in by the carload. It is charged to electric light stores. The amount consumed daily can only be estimated if accurately weighed, so as a rule, estimates of consumption are made weekly, and fuel charged and stores credited. Oil and such commodities also come in by the carload, but are taken out by the barrel. In such case, although not theoretically correct, the assumption is made that the oil is being used as soon as it leaves stores. Ad-

justment of these matters is made annually when inventories are taken.

Now let us take a few minutes to see how the stores department affects the city generally. It is conceded that the store itself is not convenient for all departments. For example, it would be ridiculous if the city treasurer had to send to a store a mile away for a dozen pencils.

First, the commissioner, or purchasing agent, places an order. A copy of this should be sent to the storekeeper. When the goods arrive, he should have an invoice in duplicate, one of which he retains after seeing the goods invoiced agree with those ordered, the other should be sent to the city treasurer by him, certified that the goods received agree with those ordered and invoiced. Someone, and usually where the storekeeper acts as purchasing agent he is better fitted than any one else, should further certify that the prices are fair and just.

In the books of the treasurer, the goods are charged to stores.

In the books of the storekeeper, what happens?

There should be a double series of books, both connected with the stock ledger. The first of these is the stores receipt book. In it all quantities should be entered on the left hand side, and the cost of each parcel on the other.

The various stores received should then be charged to their respective accounts in the stock ledger, which should be in such form that at any time, the quantity shown to the debit of any particular account represents the amount in store. The other side of the series is the outward requisitions book. This is a more elaborate piece of work, for upon it depends the distribution of stores to their proper department or purpose.

It should be a columnar volume, and whilst of course it is impossible—or rather impracticable—to have a column for every purpose for which stores are expected to supply goods, dissection to completeness is eventually absolutely essential. Quantity and money columns are required for each heading.

No delivery from stores may—or should—be made, except upon a requisition signed by an official with authority for that purpose, consequently the storekeeper should be supplied with a list of such officials from headquarters.

No delivery from stores should be made under any circumstances, excepting the requisition for the same distinctly states the work or department to which the delivery is to be charged.

It is recognized that the expense of storekeeping will be considerable, and as a rule, the storekeeper is allowed to add 5 per cent to cost when charging out goods, to cover this.

All requisitions for delivery of stores should be in duplicate. One copy is retained by the storekeeper, the other sent to the treasurer or auditor, as the case may be, monthly, for proof of the monthly statement of stores deliveries and distribution.

The books of the city treasury will show the figure in the stores controlling account monthly, as representing the balance of the stores ledger, and should, of course, agree.

A specimen page of a stores ledger will demonstrate how operations are carried on.

ELECTRIC LIGHT GLOBES.

	No.	Price	Amount
On hand Jan. 1	175	40	70.00
Purchases	500	30	150.00
	500	40	200.00
To storekeeper's expense account			11.00
			$431.00

Delivered	No.		Price	Amount
City Treasurer	40		31.5	12.60
City Hall	50		42	21.00
Police Station	20		42	8.40
Market	50		31.5	15.75
Street Lights	300		42	126.00
Library	50		31.5	15.75
Hospital	100		31.5	31.50
Inventory Dec. 31	305	@	40	122.00
	260	@	30	78.00
				$431.00

It will be seen that the amount transferred to the storekeeper's expense account represents the gross profit made by stores for the year. In this account, debits will be found for the actual expense, and the balance of this account will determine whether the five per cent is enough or too much to allow for this purpose.

It is possible to operate the whole stores system by means of a single book in columnar form, taking a page for each commodity handled, and having a small part reserved for the goods received, with columnar rulings for deliveries. Where this is done, and it usually is in the smaller cities, each page conveys the same information as the stock ledger illustrated.

The proper keeping of stores records, whilst largely mechanical, requires extreme accuracy. A good stores system infinitely simplifies the distribution of expenditures made for goods by the city treasurer, but only those with experience can know the trouble caused when the storekeeping records are badly kept.

The question of valuation of inventories deserves a little consideration at this point.

The rule that inventories should be valued at cost or market, whichever at the time of taking happens to be the lower, has a very important bearing on city storekeeping.

Supposing a city has a stock of a commodity in store which cost $10,000 three years ago, and which can now be purchased for $5,000. How should this be priced in the inventory?

There can be but one answer. It is not worth more than $5,000 and should not be shown as worth more than that figure in the inventory. In order to obviate this difficulty, it would be sound practice to annually put aside a reserve in the shape of depreciation on stores.

Conversely, however, it is difficult to prove, when the reverse is the case, and prices have soared, that the same rule should be adhered to, and cost remain the basis of charging out. This is the unalterable rule, however, and the only reason needed is the fact that stores would show

a profit to which it was not entitled unless it is strictly adhered to. Such cases are one of the main justifications for stores. Another very valid reason may, however, be given, and this is that stores in cities being maintained by the public for the public service, it is indefeasible for them to show profits. Their duty is to render service at cost or as near cost as possible. If the charge was to an individual or if the sale was in mercantile business, the business would in this case have a right to take its profit, but it cannot be too strongly emphasized that municipal stores should do no more than pay their expenses.

Losses disclosed by inventories, as to quantities, are not uncommon. These are usually traceable either to theft or to error, th[illegible]r having the great majority. Efforts to trace short[illegible]ften disclose an important error either in [illegible] or in charging out. Audit of stores is very necessary, but often taken "as read."

CHAPTER V.

WATERWORKS.

Naturally, different communities have different problems to encounter in securing that most vital of all public utilities, viz., an abundant and pure supply of water.

In the days of Charles II., a company was formed which had for its object the supply of the City of London, England, inasmuch as in those days, municipal ownership was unknown. The company is still in existence (The New River Co.) and its shares are of such tremendous value nowadays, that they are dealt in with one thousandth part of a share as a common transaction.

The largest of early comprehensive water schemes was that of the City of Birmingham, England, which, in keeping with its motto "Forward," some thirty or thirty-five years ago decided to bring its water supply from the mountains of Wales, about a hundred miles distant, at a cost of many millions of pounds. It was quickly followed by Manchester, which went to the English Lake District for its supply.

Nowadays these schemes are not looked upon as out of the way although at that time the enterprises commanded the attention of the world.

The accounting of waterworks schemes varies with the system, only insofar as the classification of operating expense is affected. The system of raising revenues does not vary much in different cities, at least not to the extent of requiring any detailed explanation.

Some cities have to draw their water supply from lakes or rivers, others from wells, whilst again, others are favored in that they have mountain watersheds within easy reach, which obviates the necessity for mechanical means of forcing the water into the supply mains in such quantities that an adequate pressure registers on the delivery mains.

Nearly all cities, however, have to maintain filtration plants.

Let us consider what classification of accounts would best be adapted to a moderate sized city having to draw its supply from a river, and to filter it before delivery for consumption.

First, we shall have to subdivide our accounts into

Pumping
Filtration
Distribution
Administration

In comparing these subheadings with those adopted for an Electric Lighting plant, it will be seen that the same system of classification is used. This, because practice shows that the accounts are more easily handled, and again because they are more easily understood, when Production, Delivery and Administration form the uniform basis in utility accounting.

Pumping. This may be performed by various means. Power from the power plant may be used as the motive power. The waterworks may own the boilers necessary to operate steam pumps, or steam may be taken from the electrical power house, according to local conditions. Of course there are other means, but the foregoing is sufficient to illustrate variety. We will assume that the city in question has its station near the intake, which is a few miles out, and in consequence finds it cheaper to operate its steam pumps by means of boilers installed for the purpose. Here be it noted that such pumps are invariably installed in such number as to take care of emergencies, such as fires or breakdowns.

Filtration. This is usually carried on between two pumping processes, the first of which brings the water to the filtration plant, and the second of which forces the filtered water from the outlet after filtration to reservoirs or water towers, so as to keep a steady pressure on the mains. Combined, therefore, assuming the cost of water rights to be a point for the administration, the cost of

pumping and filtration of the water may fairly be said to be the cost of production.

Distribution. This opens up the question as to whether maintenance of reservoirs and water towers (sometimes known as standpipes) should be charged to Production or Distribution. As the filtered water is delivered to these, and as no cost is entailed by the water going into the delivery mains, it is apparently a part of the distribution system, and will be treated as such herein.

Administration. This corresponds exactly with the same headings in electric lighting accounts, dealt with in another chapter, and reiteration is unnecessary.

Now, what classification is advisable for these accounts? The following is suggested as a skeleton, although it is fully recognized that local conditions will often require a modification, if not a reclassification.

Pumping—

- Repairs
- Fuel
- Salaries and Superintendence
- Wages
- Oil, waste, etc.
- Tools
- Sinking Fund
- Debenture interest

Filtration—

- Chemicals
- Salaries and superintendence
- Wages
- Sinking Fund
- Debenture Interest
- Repairs

Note:—Unless the plant is really large, it would be advisable to show fixed charges on the combined pumping and filtration equipment.

Distribution—

- Salaries and Superintendence
- Maintenance and repairs—reservoirs

Maintenance and repairs—water mains
Maintenance and repairs—fire hydrants
Maintenance and repairs—house connections
Maintenance and repairs—meters
Debenture interest
Sinking fund

Administration—

Salaries and superintendence
Office expense
Bad debt reserve
Depreciation on office equipment

From the foregoing it is observed that wages are not shown as an entity in respect to distribution. This, because the time sheets are charged to the exact work performed.

Having now decided what classification of accounts is applicable to waterworks plants, in order to work out an example let us take a hypothetical balance sheet of a waterworks plant for 1919 and work out a revenue account and balance sheet for 1920.

CITY OF TIMBUCTOO

Waterworks Department.

Balance Sheet, December 31, 1919

CAPITAL.

Assets.

Intake	$ 25,000.00	
Pumping stations	300,000.00	
Filtration system	200,000.00	
		$ 525,000.00
Reservoirs	150,000.00	
Distribution Mains	450,000.00	
Fire hydrants	42,381.25	
		642,381.25
		1,167,381.25
Less depreciation represented by:		
Sinking fund reserve	67,330.66	
Debentures repaid	70,637.74	
		137,968.40
		1,029,412.85

Liabilities.

Debentures		1,198,489.00
Less:		
Repaid	70,637.744	
Unsold	59,253.00	
Sinking fund	67,330.66	
		197,221.40
		1,001,267.60
Accounts payable		482.89
Due to revenue		27,662.36
		1,029,412.85

REVENUE.

Assets.

Due from capital		27,662.36
Consumers accounts receivable	6,472.54	
Less bad debt reserve	1,009.42	
		5,463.12
Fuel on hand		2,000.00
Unexpired insurances		34.09
Alum inventory		937.40
Due from general fund		19,926.14
		56,023.11

Liabilities.

Unpaid Sinking Fund Deposits	45,112.75
Debenture interest accrued	6,652.28
Debenture interest unclaimed	2,651.74
Accounts payable, alum	1,606.34
	56,023.11

The above, with one or two slight modificatoins, is the balance sheet of a western Canadian waterworks plant a few years ago, and was selected to serve as an example because it presents one or two features worthy of comment.

The first of these is the manner in which the unsold debentures are displayed. It will be noted that they are deducted from the debenture liability. The actual status of the plant would not be affected were the total debenture liability shown, and the unsold debentures placed among the capital assets. The method adopted would seem to be pref-

erable. The fact of the bonds being sold, would later result in the cash being to the credit of capital assets. This would enable capital to repay revenue the item now shown to be due, and further, enable waterworks revenue to pay part of its debt for unpaid Sinking Fund Deposits as displayed by the revenue account.

The second feature deserving comment, is the fact that the sinking fund deposits of the plant seem to be considerably more in arrears than the debenture interest. This is a common failing in cities where a large amount of taxes are in arrears, but should not be. It simply means that the moneys the waterworks plant has earned to be deposited to the sinking fund have been diverted to the revenue of the city, which is a diversion of trust funds pure and simple. The illustration presents an excellent example of the need for funds of utilities being kept in separate bank accounts, in which event such transactions could only be made by cheques deliberately transferring trust funds to the general use of the city, which everyone would denounce as criminal. Because some cities keep all their current funds in one account, these wrongdoings are covered up. It cannot be too strongly urged that when utilities earn enough to pay their sinking fund charges, they should be paid to the sinking fund and not used for any other purpose.

It may be argued that when the city sells the bonds shown to be unsold, revenue will then be able to discharge part of its liability in this respect. But it is submitted that this has nothing to do with the case, for the balance sheet shows that outside of this, revenue is entitled to a considerable sum from the general revenues of the city.

Another item worthy of comment is the amount shown as a liability for unclaimed debenture interest. It is the custom in many, if not most, cities, to pay debenture interest as due to a special bank account, known as the coupon account. By these means, such an item in the balance sheet is rendered unnecessary. There is invariably a balance to the credit of this account, and this always should represent

the amount of debenture coupons due but not presented. This item has no place in the balance sheets of the utilities. Its proper place is in that part of the general balance sheet of the city devoted to trust assets and liabilities.

But the point most worthy of comment is that shown to be "Due from General Revenue Account" or General Fund. The truth of the matter is that the funds of the waterworks plant in this case have been taken by the city for general purposes. This being the case, acting on the assumption that the utilities of every city should be treated from an accounting standpoint as separate entities, evidently general fund also should pay the waterworks interest on its advance. However, we will be charitable and assume that only urgent necessity caused the existing situation. Again, had the waterworks funds been kept in a separate bank account, this condition of affairs could only have been brought about by the issue of cheques transferring these funds. The point desired to be made however, is that the general account of the city has no right to be a debtor to any of the utilities. On the other hand, if a waterworks plant or any other utility shows a deficit on operation, it must be a debtor to someone or something for the amount of the deficit incurred, and the debt can only be to the city at large.

The example taken demonstrates as very few taken from actual practice could do, the undoubted merits of the double account balance sheet as compared with the dangers of the old fashioned balance sheet.

After this digression, we may proceed to the transactions for 1920. In so doing, it should be remarked that whilst these can only be displayed as annual in a demonstration, the adjustments of revenue and expenditure should be and are made monthly in all cities. Thus, earnings are credited to earnings every month and charged to consumers. Stores cannot appear in an example such as this, although it will be fully recognized that stores and Mr. Storekeeper have a tremendous influence on municipal accounting. Still, if the reader can follow an example right from the

first balance sheet, through revenue to the final balance sheet, he will have gained the principle of the system, which is all that can be expected.

Waterworks capital bank account will show, for purposes of demonstration:

Deposits	59,253.00	
Withdrawals—revenue		27,662.36
Accounts payable		482.89
Other withdrawals		22,000.00

Capital expenditure in the ledger will show:

Waterworks distribution	26,000.00	
Contractors' drawbacks		4,000.00

Waterworks revenue has no bank account in this demonstration, but we will assume the following cash transactions:

Coupon account for old coupons		2,651.74
On account of old sinking fund		25,010.62
Debenture Interest, Production		26,250.00
Debenture Interest, Distribution		28,248.15
Sinking fund deposits, current, production		7,800.00
Sinking fund deposits, current, distribution		8,163.18
Debenture principal, production		3,200.00
Debenture principal, distribution		3,346.07
Pumping:		
Repairs to machinery	2,325.00	
Repairs to buildings	500.00	
		2,825.00
Fuel		19,750.00
Salaries and superintendence		5,000.00
Wages		6,000.00
Oil, waste, etc.		2,000.00
Filtration:		
Chemicals		4,000.00
Salaries and superintendence		3,000.00
Wages		1,500.00
Repairs		500.00
Distribution:		
Salaries and superintendence		8,000.00
Reservoirs, maintenance and repairs		2,000.00
Water mains, maintenance and repairs		11,000.00
Fire hydrants, maintenance and repairs		500.00
House connec., maintenance and reps.		5,000.00

Meters, maintenance and repairs	600.00	
Administration:		
Salaries and superintendence	5,000.00	
Office expense	8,000.00	
Hydrant rents		15,000.00
Frontage taxes		40,757.40
Consumers		125,000.00
From capital		27,662.36
	189,344.76	208,419.76

As the waterworks department has no separate revenue bank account, we have to look on the general fund of the city as a substitute.

At Dec. 31, 1919, General Fund Owed	19,926.14
It has received as above	208,419.76
	228,345.90
It has disbursed	189,344.76
It owed Waterworks at Dec. 31, 1920	39,001.14
Accounts receivable at Dec. 31, 1920, were	9,278.35
Fuel on hand was inventoried at	1,500.00
Alum and chloride on hand were inventoried at	1,350.00
Accounts payable were, Chemicals 1,725.00	
Fuel.. .... 3,250.00	

Whilst frontage taxes are taken to be a cash receipt in our example, they would not be such in actuality, for they represent the total amount levied, and even if there were a separate bank account for waterworks revenue, it is not probable the city would do more than pay over actual collections. In our example, it will be noticed that the amount of frontage taxes exactly equals the amount required for sinking fund and debenture redemptions on the total cost of distribution.

This is on the theory that properties fronting on the water mains should pay the cost, leaving those served to pay interest on capital and operating expense. This is a much debated theory and there is a great deal to be said in argument on both sides.

We are now ready to take off the revenue account and balance sheet at the end of 1920, when further criticism may be required.

WATERWORKS

REVENUE ACCOUNT

Expenditure			Revenue.		
Pumping:			Consumers:		
Fuel on hand Jan. 1	2,000.00		Cash Receipts	125,000.00	
Purchased and not paid for	3,250.00		Accounts Receivable Dec. 31	9,278.35	
Purchased and paid for	19,750.00				
		25,000.00		134,278.35	
On hand Dec. 31		1,500.00	Accounts receivable Jan. 1	5,463.12	
					128,815.23
		23,500.00	Frontage Taxes		40,757.40
Salaries and superintendence	5,000.00		Hydrant Rents		15,000.00
Wages	6,000.00				
		11,000.00			
Repairs—Machinery	2,325.00				
Repairs—Buildings	500.00				
		2,825.00			
Oil, waste etc.		2,000.00			
Fixed charges, Debenture interest	26,250.00				
Fixed charges, deben. principal...	3,200.00				
Fixed charges, sinking fund	7,800.00				
		37,250.00			
		76,585.00			
Filtration:					
Chemicals on hand, Jan. 1	937.40				
Cash payments	4,000.00				
Purchased but not paid for	1,725.00				
	6,662.40				
Less not paid Jan. 1 .....1,606.34					
Less inventory Dec. 31... 1,350.00					
	2,956.34				
		3,706.06			

REVENUE ACCOUNT (Continued)

Salaries and superintendence	3,000.00	
Wages	1,500.00	
Repairs	500.00	
		5,000.00
Total cost of production		85,281.06
Distribution:		
Salaries and superintendence	8,000.00	
Maintenance & Repairs—		
Reservoirs	2,000.00	
Water Mains	11,000.00	
Fire Hydrants	500.00	
House Connections	5,000.00	
Meters	600.00	
	27,100.00	
Fixed Charges—		
Debenture Interest	28,248.15	
Debenture Principal	4,346.07	
Sinking Fund Deposits..	5,163.18	
	66,857.40	
Total cost of Distribution.		66,857.40
Administration:		
Salaries and superintendence	5,000.00	
Office expenses	8,000.00	
		13,000.00
Surplus for year.....		19,434.17
		184,572.63

184,572.63

WATERWORKS BALANCE SHEET.

December 31, 1920.

CAPITAL

Assets.			Liabilities.		
Intake	25,000.00		Debentures		1,198,489.00
Pumping Stations	300,000.00		Less repaid	77,183.81	
Filtrating System	200,000.00	525,000.00	Less Sinking Fund	85,987.07	
					163,170.88
Reservoirs	150,000.00				
Distribution System	476,000.00				1,035,318.12
Fire Hydrants	42,381.25		Contractors' drawbacks		4,000.00
		668,381.25			
		1,193,381.25			
Less depreciation represented by:					
Sinking Fund as at Jan. 1	67,330.66				
4 per cent. accumulation	2,693.23				
1920 Deposits	15,963.18				
	85,987.07				
Debenture repayments	77,183.81				
		163,170.88			
		1,030,210.37			
Capital Bank Account		9,107.75			
		1,039,318.12			1,039,318.12

REVENUE

Assets		Liabilities.	
Consumers' Accounts	9,278.35	Sinking Fund deposits in arrears	20,102.13
Inventories	2,850.00	Debenture interest accrued	6,652.28
Unexpired insurances	34.09	Accounts payable	4,9[illegible]5.00
Due by General Fund	39,001.14	1920 operating supplies	19,434.17
	51,163.58		51,163.58

As previously intimated there are criticisms to be made of the statement submitted.

The first question that may be asked is, if there is a surplus on operations for 1920, why does this fact in itself not reduce the liability of the City to the Waterworks Revenue Account. In answering this question the reader will recollect that the surplus on operations should be added to the surplus of previous years, if any, or taken away from the deficit of previous years, if any. In this particular case, however, the liability of the city to the Waterworks plant as at the end of 1919, did not represent the surpluses or deficits from previous years. Consequently the fact that a surplus has been acquired during 1920 need not in itself affect the liability of the city at all. The facts in this case are, that the city has been taking through its current funds the profits acquired by the waterworks plant from time to time without giving a proper account of them.

It will be noticed that the Capital Balance Sheet for 1920 has been so designed as to wipe out any transactions between Capital and Revenue. Whilst this is excellent in theory, it is almost impossible in practice unless separate bank accounts for Capital and Revenue have been kept right from the commencement.

Then again it will be noticed that 4% has been added to the Sinking Fund Reserve as at the end of 1919. There should be a further accrual added in respect of current deposits, but this cannot be done in our example because we are not given the dates on which the deposits were made. It will further be noticed that the Bad Debt Reserve as at the end of 1919 has been eliminated. This should not, of course, be the case. If it is considered that the Reserve for Bad Debts at the end of 1919 is sufficient to take care of bad debts made during 1920, well and good, but if, on the other hand, what was shown as a reserve for bad debts at the end of 1919 had actually been written off, then a further reserve should have been created in respect of the 1920 business.

Insurance transactions in this case appear to have been merged in general expenses. This should not have been, and any statement showing unexpired insurance at the end of a year without showing an expenditure for that purpose during the year is bound to be incorrect.

CHAPTER VI.

ELECTRIC LIGHT PLANTS.

Accounting for the operation of Electric Light plants as between a small urban community of two or three thousand inhabitants and for a large city, varies only in volume with the exception of the fact that electricity for power purposes varies the scheme somewhat.

The work is divided into two portions, first that appertaining to the raising of revenue, and secondly that respecting the cost of operation.

In the present case, we will take that of a city which has to supply electricity for

A. Electric light purposes.
B. Domestic power.
C. Pumping water.
D. Street railway purposes.

and in the commencement, discuss the methods by which charges are made and revenues collected.

This can again be subdivided between

1. Consumers, who may be classified under two headings, viz., residences and businesses.
2. Street lighting.
3. Lighting of public buildings.

Let us examine the theory on which charges for services rendered by utilities such as electric light and waterworks are based. First let us understand that there is a difference between the services rendered by such utilities and those rendered by a street railway, which serves visitors who bear no share of the upkeep of the city as a municipal institution.

Eminent authorities are agreed that over and above carrying charges, and reserve for obsolescence, utilities should not be expected to earn a profit which may be used for the reduction of general taxation. On the other hand, they are agreed that under no circumstances should they be allowed to become a charge upon the city at large in respect of deficits. In other words, they should be self-support-

ing and no more. Does this not mean that consumers should be supplied at as near cost price as possible? This having been decided in the affirmative, we may proceed to examine the methods under which charges are made to consumers.

In class A, subsection 1, residences are sometimes charged different rates to those charged businesses because they are more steady in the hours current is consumed. For example, a considerable portion of a lighting circuit may be devoted to a business section of the city where all or practically all of the lights installed are turned on in the dark months from nightfall to 6 p.m. or so, and then shut off. In order to fill this demand, extra fuel and power might have to be provided for that short space of time, at a considerable advance in cost. Such a thing might be as that this fact would have to be taken cognizance of in fixing the rate, in places where no "service charge" was made.

Street Lighting—paid for out of the general tax revenues of the city—is the largest individual consumer the city has. In the average city, the street lighting averages from 20 to 25 per cent of the amount received from all other consumers put together. It must be apparent, therefore, that the cost per kilowatt for street lighting cannot be anything like as high as for other consumers, inasmuch as no meter readers are required, and that where many hundreds, if not thousands, of accounts would require to be sent to consumers to raise the same amount of money as street lighting represents, there is a saving of all the clerical work, stationery, postages, etc., in connection not only with the rendition of accounts, but of their collection. Cost in this case is the cost of production at the power house, plus line loss and maintenance of the service.

Lighting of public buildings.—Inasmuch as the price charged to the public is as nearly cost as possible, public buildings may be reasonably expected to pay the same as other consumers.

In order to equalize the cost of services as between businesses and other premises, many cities adopt what is known

as a "service charge." This is based on the kilowatt connected load. Charges for energy are graduated as a general rule, according to the amount used. The block system is the most popular of the schemes for graduating charges, and the following illustrates this:

10,000 watt hours @ 9 cents	=	.90
10,000 watt hours @ 8 cents	=	.80
10,000 watt hours @ 7 cents	=	.70
3,000 watt hours @ 6 cents	=	.18
Consumption 33,000		2.58

Custom used to call for a charge of perhaps 25 cents per month as meter rent, but the majority of cities have decided that the function of measuring energy is that of the plant and not that of the consumer, with the result that the system of charging for meters has fallen into disfavour generally.

The work of measuring the current sold is by general consent becoming part of the work of the City Treasurer's Department, instead of being performed by men under the control of the City Electrician. This promotes efficiency, as where the treasurer is held responsible for the prompt rendition of accounts, it is not fair to blame him in case the employees of another department are tardy in performing their duties.

Meters should be read once every month at least, and the same district should be covered at the same time each month for the sake of comparison.

Discounts are usually allowed for prepayment of accounts and a certain number of days given to settle, after which service is discontinued without further notice. Prompt collection of accounts is essential to efficiency, and to the proper financing of the department.

A different circuit is generally brought into use where power is supplied for domestic purposes. As this power is largely used during the day time, at hours when the plant is carrying a load which would be so light as to be an actual loss but for the sale of this class of current, a considerable reduction in rates, as compared to those for lighting purpurposes only, is invariably made.

Pumping Water. In cities where this is necessary, a special circuit should be provided wherever possible, when electricity is the motive power, and production cost only should be charged for this service. Where, however, steam is taken direct from the boilers, the electrician or power house engineer should be the judge of what the cost will be. Wherever possible, however, cities instal separate pumping stations which do not require segregation of costs.

Street railway purposes. Energy must be measured and charged at production cost, plus line loss. Fair sized cities now maintain separate units for street railway power but a small city cannot afford the capital expenditure necessary for its provision, hence measurement of current is necessary in our example for charge to the street railway department.

Sundry revenues. More than once, electric light deposits have been found to be treated as revenue and expenditure according to the amounts received and disbursed. This is distinctly incorrect. Such moneys are a trust, and have no place in a profit and loss statement. Inspection fees, reconnection fees and so forth are, however, a proper credit to revenue.

Interest on unexpended capital. The point has occasionally been raised as to whether such moneys should be credited to Revenue or to Capital. There is no argument. If the carrying charges on the debentures representing unexpended capital are charged to operation, beyond doubt interest on unexpended capital should be deducted from such carrying charges, and not retained as moneys in hand for capital expenditure.

Electric Light Expenditure. This may be divided into three subsections:

Production
Distribution
Administration

In our example, we are proposing to deal with a plant which cannot separate the cost of producing power from that of producing light.

What information is required in the shape of dissection of accounts in order to properly display the cost of production?

This, of course, depends on the class of plant in operation, Diesel, Semi Diesel, Cylinder Steam, Turbine Steam or what not.

For our example, we will assume steam, leaving the class of engine out of the question.

In a fair sized plant, say suitable for a city of 50,000 inhabitants, the following accounts are recommended:

Production:

1. Fuel
2. Engine and boiler room labour
3. Salaries and superintendence
4. Water, oil, grease, waste, etc.
5. Repairs to buildings
6. Repairs to steam equipment.
7. Repairs to electrical equipment
8. Tools
9. Debenture Interest.
10. Sinking fund or debenture redemption.
11. Insurance

The sum total of these should represent the cost of delivering energy from the power house for the total supply required. Some of these items require a little explanation.

No. 3. *Salaries and superintendence* should include a proportion of the electrical superintendent's salary, as he has duties outside the power house. Salaries should include all the permanent staff, and hourly labour should be charged under caption No. 2.

No. 8. *Tools* should be treated as a capital charge in the first place. For instance, a firm supplying boilers invariably supplies tools for operation, such as boiler drills, etc., and it is quite correct to charge them to capital, but all renewals should be placed in the revenue account.

No. 11. *Insurance*. This should be separated as between fire insurance and employers' liability insurance.

Having agreed that the foregoing is a good method of displaying the cost of production, we are free to consider

the best method of similarly displaying the cost of distribution.

The dissection of accounts needed is suggested as:—

Distribution:

1. Maintenance and repairs
   (a) Street lighting
   (b) Consumers' distribution
2. Engineering and Superintendence
3. Liability insurance
4. Debenture interest
5. Debenture redemption or sinking fund.

No further explanation of this distribution seems necessary other than that liability insurance generally covers liability for accidents to both employees and the public.

A word of explanation as to the manner in which the fixed charges are, or should be divided, between Production and Distribution may be timely, however.

Debentures for electric lighting purposes are usually issued for the purposes of such as an entity, not specifically for distribution, generators, or boilers as the case may in actuality be.

The only method whereby the carrying charges may be ascertained as between distribution and production in such case is to take the actual capital cost from time to time, and base the annual carrying charges on the figure so obtained. In a theoretically perfectly financed city, this would not be necessary, but in general the methods outlined is satisfactory.

The next department to be dealt with is that of the administration.

Save in exceptional cases, the following dissection of accounts will suffice:—

Administration:

1. Salaries
2. Office expense
3. Bad debts
4. Taxes and rentals

No. 1. will comprise that part of the cost of the city ad-

ministration devoted to electric light and power, and should include a part of the total expense, not merely of the treasurer's office. It goes without saying that a part of the Mayor's, Commissioners', Aldermen's, City Clerk's and the City Solicitor's time is occupied in connection with this department, and consequently a share of their cost is properly chargeable to it.

No. 4. *Taxes and rentals.* It is becoming more and more realized that utilities of cities should be placed on exactly the same footing as private companies would operate on. Consequently, more and more cities are calling on their utilities to pay taxes to the general funds of the city. If this is not done, the general revenue of the city is looked upon as bonusing the utilities to the amount of their taxes. Some theorists are even going so far as to advocate that all branches of civic enterprise should be taxed if the true cost of their operation is to be ascertained, but as, outside utilities, civic operations are mostly financed from the general revenues of the city in any case, this argument is hard to understand. The foregoing gives reason for the setting up of "Taxes" in the heading under discussion. Rentals represent actual outlay.

Having discussed the various constituents of the revenue account of an electric light plant in a city, our next consideration will be an actual demonstration of the bookkeeping in connection therewith.

The reader will readily understand that this is only possible in skeleton form, and that there will be many things omitted which are met with in actual practice, but which do not affecting bookkeeping principles.

DEMONSTRATION OF ELECTRIC LIGHT BOOKS.

It is assumed that there is no need to detail transactions leading up to the formation of the following skeleton set of figures, all of which is bookkeeping in elementary form.

The following is a balance sheet of an Electric Light and Power Plant at the end of 1919, and it has been selected on account of the fact that it covers nearly all of the points raised in Chapter 6 and at the same time presents one or two financial features not hitherto dealt with.

Capital Assets:		Capital Liabilities:	
Buildings and lands	274,500.00	Debenture issues	1,450,000.00
Machinery	750,000.00	Less sinking fund	234,500.00
Transformers	150,000.00		
Poles and Wire—Consumers	250,000.00		1,215,500.00
Poles and Wire—Arc Circuit	60,000.00	Due to Revenue	34,500.00
	1,484,500.00		
Less depreciation represented by sinking fund	234,500.00		
	1,250,000.00		1,250,000.00

Revenue Assets:		Revenue Liabilities:	
Accounts receivable	17,250.00	Salaries and Wages	12,000.00
Inventory of stores and loose tools	24,000.00	Accounts payable	30,000.00
Unexpired insurance	250.00	Debenture interest accrued	10,700.00
Office furniture and fixtures	5,000.00	Sinking fund accrued	13,000.00
Bank and cash accounts	7.500.00	Revenue surplus	22,800.00
Due by capital	34,500.00		
	88,500.00		88,500.00

The cash transactions for 1920 were as follows:—

Receipts:		
Electric Light and Power, Receipts		325,000.00
Street Railway Department		125,000.00
Street Lighting		60,000.00
Sundry Inspection Fees		1,000.00
Expenditures:		
Production:		
Fuel purchased	164,000.00	
Engine and boiler room labor	30,000.00	
Salaries and superintendence	25,000.00	
Water, oil, grease, waste, etc.	9,000.00	
Repairs to buildings	5,000.00	
Repairs to steam equipment	12,000.00	
Repairs to electrical equipment	8,000.00	
Tools, repairs and new	4,000.00	
Debenture interest paid.....	62,000.00	
Sinking Fund	42,129.30	
Insurance	4,450.00	
Distribution:		
Pole line, street lights, maintenance and repairs	7,300.00	
Pole line consumers, ditto	8,500.00	
Engineering and superintendence ...	15,000.00	
Liability insurance	5,000.00	
Unpaid accounts	30,000.00	
Debenture Interest	12,000.00	
Sinking Fund	32,070.57	
Administration salaries	17,000.00	
Office expenses	7,000.00	
Taxes and rentals	6,000.00	
Unpaid salaries	12,000.00	
	517,449.87	511,000.00
Debenture Interest outstanding at end of year, Power House and Plant ....$		10,700.00
Sinking Fund, Power House and Plant		13,000.00
Unpaid Accounts, salaries: Production, $5,000, Administration $1,000.....		6,000.00
Fuel		27,000.00
Accounts Receivable		19,500.00
Unexpired Insurance		250.00
Stores, $5000, Loose Tools, $1000, Fuel, $27,000		33,000.00

From the foregoing information we are required to prepare a Revenue statement and balance sheet.

The reader will first notice that no expenditure has been made on capital account—an unusual thing in practice—but this skeleton set of accounts is designed purely and simply to record the revenue transactions.

First, we know the cash and bank account combined will be

Balance 1919	7,500.00	
Receipts	511,000.00	
Expenditures		517,449.87
Balance, 1920		1,050.13
	518,500.00	518,500.00

The revenue account is as follows: it will be seen that its composition includes for demonstration purposes many figures not actually to be shown in a finished statement.

REVENUE ACCOUNT
ELECTRIC LIGHT AND POWER

EXPENDITURE.

Production:			
On hand Jan. 1 (assumed)	22,000.00		
Paid for	164,000.00		
Unpaid accounts	27,000.00		
		213,000.00	
Less inventory, Dec. 31 ..		27,000.00	
			186,000.00
Engine & boiler room labor		30,000.00	
Salaries and superint., paid	25,000.00		
Salaries and supt., owing ..	5,000.00		
		30,000.00	
			60,000.00
Water, oil, grease, etc., paid	9,000.00		
Inventory, Jan. 1 (assumed)	1,000.00		
	10,000.00		
Less inventory, Dec. 31 ...	5,000.00		
		5,000.00	
Tools, inventory Jan. 1 (assumed)	1,000.00		
Payments	4,000.00		
	5,000.00		
Inventory, Dec. 31	1,000.00		
		4,000.00	
Repairs Buildings	5,000.00		
Steam Equipment	12,000.00		
Electrical Equipment	8,000.00		
		25,000.00	
Insurance unexpired Jan. 1	250.00		
Paid	4,450.00		
	4,700.00		
Unexpired, Dec. 31	250.00		
		4,500.00	
			38,450.00
			284,450.00

REVENUE.

Electric Light and Power Receipts	325,000.00	
Accounts Receivable	19,500.00	
	344,500.00	
Less Accounts Receivable, Jan. 1	17,250.00	
		327,250.00
Street Railway		125,000.00
Street Lighting		60,000.00
Sundry Inspection Fees		1,000.00

Depreciation represented by					
Sinking Fund			42,129.30		
Debenture Interest			62,000.00		
				104,129.30	
Total Cost of Production				388,579.30	
Distribution:					
Pole Lines Maintenance and Repairs:					
Consumers	8,500.00				
Street Lights	7,300.00				
		15,800.00			
Engineering, superintendence		15,000.00			
			30,800.00		
Liability insurance			5,000.00		
Dep'n rep. by Sinking Fund			32,070.57		
Debenture Interest			12,000.00		
Total cost of distribution .				79,870.57	
Administration:					
Salaries:					
Paid		17,000.00			
Unpaid		1,000.00			
			18,000.00		
Office expenses, including $500 depreciation			7,000.00		
Taxes and Rentals			6,000.00		
			31,000.00		
Total cost of Administration				31,000.00	
Surplus for year				13,800.13	
				513,250.00	513,250.00

BALANCE SHEET

Capital Assets:

Buildings and Land		274,500.00	
Machinery		750,000.00	
Transformers		150,000.00	
Poles and Wire, Consumers		250,000.00	
Poles and Wire, Arc Circuits		60,000.00	
			1,484,500.00
Less depreciation to Dec. 31, 1919		234500.,00	
Less 1920 provis. production	42,129.30		
Distribution	32,070.57		
		74,199.87	
			308,699.87
			1,175,800.13

Revenue Assets:

		1,175,800.13
Due by Capital	34,500.00	
Accounts Receivable	19,500.00	
Unexpired insurances	250.00	
Stores and loose tools	33,000.00	
Office furniture and fixtures	4,500.00	
Bank and Cash Accounts	1,050.13	
		92,800.13
Office Depreciation Bank Reserve Account		500.00
		93,300.13

Capital Liabilities:

Debentures	1,450,000.00	
Less Sinking Fund	308,699.87	
		1,141,300.13
Due to Revenue		34,500.00
		1,175,800.13

Revenue Liabilities:

Sinking Fund accrued	13,000.00	
Debenture Interest accrued	10,700.00	
Unpaid Accounts	27,000.00	
Unpaid salaries	6,000.00	
		56,700.00
Surplus as at Dec. 31, 1919	22,800.00	
For 1920	13,800.13	
		36,600.13
		93,300.13

There are two or three matters in the example worthy of comment. The sinking fund deposits and debenture interest charges have been paid at the proper times, so that the liabilities on these accounts are the same at the end of 1920 as they were at the end of 1919. The insurance also seems to have been unvaried from that of the previous year as the unexpired moiety is the same in both years.

A very weak point is that the depreciation reserve for 1920 has only been increased by the amount of the annual sinking fund deposits, whereas the accumulation on the balance of the sinking fund at the end of 1919 should be added at the required rate which is not stated in the example. If at 4 per cent the increase of Sinking Fund, and correspondingly the Depreciation Reserve, would be $9,380.00. This does not, however, affect the revenue account of the plant, being a cross entry on figures obtainable from the Sinking Fund books.

Then again, the question should have given the separation of stores into their component parts—fuel, oil, waste, etc., tools and so on, which it did not, and in consequence it was necessary to estimate these in working out the question.

But a fair example has been given, which if traced back, will show the accounting principles involved.

CHAPTER VII.

STREET RAILWAYS

Street railways are today recognized as an indispensable public utility, yet strange to say, some of the largest cities on the North American continent do not yet own their own street railway systems.

A few years ago steam trams were a novelty. Later, cable trams were an innovation attracting attention, and are still in operation in several American cities—Seattle having an excellent cable tram service over its hilly streets, with electric service for its main traffic. Electricity is, however, the generally adopted motive power in these days.

Electric trams are operated on two systems—the overhead trolley, and the underground circuit. Of the two, the overhead trolley is the most commonly met with, and according to all accounts is destined to be the universal system of the future. Therefore this chapter will deal exclusively with this form of transaction.

The greatest of all the difficulties encountered in the financing, and as a corollary, the accounting of all traction systems, is the uncertainty as to what the future holds.

Only a few years ago the popular method of transportation in London, England, excluding Chanks' pony, was the tram—or in American parlance, the street car. Today the motor bus reigns supreme, or almost supreme, and the tramways systems are seriously affected.

It is difficult to foresee what the future holds in store in this respect, and it is necessary to realize this fact in considering the financial and accounting aspects of street railways, for apart from depreciation, possible if not probable obsolescence becomes a great factor.

We will, however, for the time being, discuss the street railway financing and accounting requisite, we will say, for a city of 100,000 souls, which has not bartered its birth-

right to a Public Service Corporation, but which rightly owns and operates its own street railway system.

Commencing at the inception of the scheme, we find that the rule that public utilities should be self supporting does not necessarily apply to the street railway.

The customers of a street railway are not restricted to the inhabitants of a city. The construction of a street railway along certain thoroughfares is often considered to add to the value of properties along these thoroughfares, resulting in an increase of assessment and a consequent increase in tax revenues to the city at large, for which the street railway receives no credit. At the same time, an effort should be made to make the street railway support itself from its own earnings.

The capital necessary to enable the construction of a street railway may be divided into four parts, where the department is independent of the electric light and power department, as is assumed to be in the case under consideration.

Permanent Way
Motive Power
Overhead System
Rolling Stock

The life of these components of the system must of necessity vary, and may be taken cognisance of in the debentures issued therefor, but unless the system be very large it is customary to average the estimated life of the whole, and for all debentures to be spread over the same period. The great danger encountered is the tendency to give the plant too long a life. One Canadian city covers all its indebtedness with forty year bonds and another with thirty year bonds. Without opening up the argument as to whether terminable bonds are right in cases where the capital investment is kept up to one hundred per cent of its original value and efficiency through revenue, in view of possible if not probable obsolescence, the shorter term is thought by many competent authorities to be the safer method of finance.

The revenues derived from street railways may be divided under three headings with advantage.

1. **Cash fares.**
2. **Tickets or tokens.**
3. **Advertising.**

The cash fares are quite easy of proof with modern pay-as-you-enter cars, for the conductors simply take their fare boxes to the clerk or cashier at the barns, and have them counted when they finish their daily terms of duty.

Tickets and tokens require more detailed checking, and an examination of the system followed may be timely. Each conductor is daily given a definite number of books, for which he is charged. At the end of his daily work, he is called upon to account for these in tickets or cash and this is so far quite simple.

But the question of unused tickets causes further research. It will readily be understood that the fact that $1000 worth of books of tickets were sold in any one day does not of necessity mean that the street railway earned that amount in that day, as possibly only one-tenth of the tickets would have been used. Consequently, it is necessary to record the tickets sold, and also to take accurate count of those received back through the fare boxes. The difference represents the liability of the street railway to the public for services not yet performed. In theory this is perfect, but it must be recognized that many of the tickets will never be used because of loss, or removal from the city, and similar causes, so it is quite permissible to write a percentage off the value of unused tickets for this reason.

It is imperative also, that the destruction of used tickets should be insisted upon, as otherwise, as some cities know to their cost, loss through dishonesty may occur.

But a general record of this nature will not meet all the requirements of the officials in charge of this department, for the information as to earnings thus far provided only gives the total earnings of the street railway from fares. It is absolutely essential that information as to the earnings of each route should be available, and this may be obtained by segregating the cash fares and used tickets re-

ceived through the fare boxes. Tickets sold do not enter into this information at all. All such records should be tabulated not only as to earnings, but as to the number of passengers carried.

As workmen's tickets are growing into disfavour with Labour receiving equal status with other classes of the community, the effect of these tickets upon the earnings and profits of a street railway need not be discussed. A few years ago, they required special attention, on account of the cheapness of workmen's fares.

Advertising in street cars is an important feature in the income account. In most cases we find a contract let to an advertising agency for a lump sum per annum per car.

Turning to the expenditure side, we find it necessary to divide this into four main departments in the average street railway. These may with advantage be further subdivided as under

1. Maintenance	Permanent way Motive power Overhead system Rolling stock
2. Transportation	Motormen Conductors Inspection Miscellaneous
3. Administration	Superintendence Accident insurance Office expense
4. Fixed Charges	Principal Interest

Taking maintenance first, we can readily see that details will be required in order to present a proper account. Whilst in permanent way, nothing but repairs are necessary, motive power will require considerable dissection. There will be (assuming our plant to be quite independent of the electric light and power department)

Repairs to Buildings
Boilers
Electrical machinery
Salaries and Wages
Fuel
Oil, Waste, etc.
Insurance

at least. And here be it noted that we are departing from the principle laid down in the chapters on waterworks and electric light, that each branch of capital expenditure should bear its own fixed charges. This is because there appears to be no line of demarcation that can be fairly drawn between production and distribution.

Overhead system and rolling stock maintenance should each be subdivided between supplies and labour.

In Transportation, uniforms for motormen should be charged to motormen's salaries and the same applies to conductors and inspectors. Miscellaneous expenses will include cleaning cars, and the like, which cannot be classified under the heading of repairs to rolling stock.

As with other utilities, a percentage of the time of certain city officials must of necessity be devoted to the street railway, and an allowance for this purpose should be made to the general account of the city if the street railway is to stand on its own feet financially.

Accident insurance is included in administration, because accidents may occur under the heading of either maintenance or transportation.

The other headings need no comment, and we will pass on to a demonstration set of accounts of a street railway for a year.

The balance sheet of a railway was as under at the end of 1920.

MUNICIPAL STREET RAILWAY BALANCE SHEET

CAPITAL.

Assets.			Liabilities.	
Permanent Way	225,000.00		Debentures	725,000.00
Power House	50,000.00		Less Sinking Fund	51,650.99
Boilers	25,000.00			
Machinery	200,000.00			673,349.01
		500,000.00	Accounts payable	526.71
Overhead system	200,000.00		Capital donated	53,600.00
Rolling stock	131,876.46		Due to Revenue	53,888.74
		331,876.46		
		831,876.46		
Less depreciation represented by				
Sinking Fund Reserve	51,650.99			
Depreciation Reserve	34,120.09			
		85,771.08		
		746,105.38		
Accounts Receivable		1,138.99		
Investments (Depreciation Reserve)		34,120.09		
		781,364.46		781,364.46

REVENUE

Assets.		Liabilities.	
Due by Capital	53,888.74	Accounts Payable:	
Stores and Material	10,891.92	Salaries	5,000.00
Conductors' Change Fund	1,500.00	Fuel	7,425.00
Accounts Receivable—Advertising	879.02	Oil, etc.	535.00
		Reserve Fund for unused tickets	500.00
		Due to general fund	52,529.08
		Surplus	1,170.60
	67,159.68		67,159.68

Capital donated is in respect of land given by the city.

A Special Depreciation Reserve is being created on a basis of two-thirds of the Sinking Fund charges owing to the life of bonds being considered too great.

Conductors' change fund represents the amount provided to supply conductors with the small change required by them. This is in order to obviate the need for them mixing their own money with that of the corporation. The fund is required to remain at $1,500.

The transactions for 1921 are

CASH:		
Cash fares		482,899.30
Ticket sales		29,905.00
Advertising		6,902.50
Stores	139,421.00	
Power House Salaries and Wages	27,000.00	
Repairs :		
Wages only	500.00	
Boilers	500.00	
Machinery	3,000.00	
Insurance	1,750.00	
Motormen's salaries and uniforms	100,000.00	
Conductors' salaries and uniforms	80,000.00	
Inspectors' Salaries and Uniforms	15,000.00	
Wages—car cleaning	10,000.00	
Rolling stock repairs	9,000.00	
Overhead line repairs	5,200.00	
Superintendence	15,000.00	
Office expenses	25,000.00	
Debenture interest	36,250.00	
Sinking Fund	13,320.55	
Depreciation reserve	8,680.36	
Revenue accounts payable	7,960.00	
Capital—accounts payable	526.71	
Accounts receivable		1,138.99
	498,108.62	520,845.79
Stores show on hand	10,891.92	
Receipts	153,421.00	
Requisitions and deliveries:		
Repairs to buildings		500.00
Repairs to boilers		500.00

Repairs to machinery	2,000.00
Fuel	106,000.00
Oil, waste, etc.	4,000.00
Transportation sundries	1,500.00
Rolling stock repairs	9,000.00
Overhead system repairs	5,200.00
Office supplies	1,000.00
On hand, Dec. 31	34,612.92
	164,312.92 164,312.92

The cash for 1921 is being kept entirely separate from the general cash of the city.

Outstanding accounts due at the end of 1921 are: Salaries at power house $2,300; Motormen $5,000; Conductors $4,000; Inspectors, $1,000; Stores $14,000.

The latter item represents goods taken into store but not paid for.

Unpaid advertising revenue is $1,100.

We should now be able to prepare a statement for the year 1921, which will be compiled as follows:

REVENUE ACCOUNT.
STREET RAILWAY

EXPENDITURE.

Maintenance:			
Power House salaries and wages:			
Paid	27,000.00		
Unpaid	2,300.00		
	29,300.00		
1920 account	5,000.00		
		24,300.00	
Building Repairs:			
Wages	500.00		
Stores	500.00		
		1,000.00	
Boilers repairs:			
Wages	500.00		
Stores	500.00		
		1,000.00	
Machinery Repairs:			
Wages	3,000.00		
Stores	2,000.00		
		5,000.00	
Insurance		1,750.00	
Fuel		106,000.00	
Oil, waste, etc.		4,000.00	
Rolling Stock Repairs:			
Wages	9,000.00		
Stores	9,000.00		
		18,000.00	
Overhead Line Repairs:			
Wages	5,200.00		
Stores	5,200.00		
		10,400.00	
			171,450.00
Transportation:			
Motormen, salaries and uniforms		105,000.00	
Conductors, salaries and uniforms		84,000.00	
Inspectors, salaries and uniforms		16,000.00	
Incidentals, car cleaning		11,500.00	
			216,500.00
Administration:			
Superintendence		15,000.00	
Office expense		26,000.00	
			41,000.00
		Forward	428,950.00

REVENUE.

Cash fares			482,899.30
Ticket Sales, outstanding Jan. 1	500.00		
Sales	29,905.00		
	30,405.00		
Reserve	1,000.00		
		29,405.00	
Advertising:			
Receipts	6,902.50		
Unpaid	1,100.00		
	8,002.50		
1920 account	879.02		
		7,123.48	
			519,427.78
		Forward	519,427.78

Forward		428,950.00
Fixed Charges:		
Sinking Fund	13,320.55	
Depreciation	8,680.36	
Debenture Interest	36,250.00	
		58,250.91
Total Expenditure		487,200.91
Surplus income for 1921		32,226.87
		519,427.78

Forward	519,427.78
	519,427.78

BALANCE SHEET

CAPITAL

Assets

Permanent way	225,000.00	
Power House	50,000.00	
Boilers	25,000.00	
Machinery	200,000.00	
		500,000.00
Overhead system	200,000.00	
Rolling stock	131,876.46	
		331,876.46
		831,876.46
Less depreciation represented by:		
Sinking Fund as at Jan. 1	51,650.99	
4 per cent. accumulation	2,062.40	
1921 deposit	13,320.55	
		67,033.94
		764,842.52
Special depreciation as at Jan. 1	34,120.09	
4 per cent. accumulation	1,364.80	
1921 deposit	8,680.36	
		44,165.25
		720,677.27
Investment Depreciation Reserve		44,165.25
		764,842.52

Liabilities.

Debentures	125,000.00	
Less Sinking Fund	67,033.94	
		657,966.06
Capital donated		53,600.00
Due to Revenue		53,276.46
		764,842.52

REVENUE

Cash at bank and on hand		22,737.17
Accounts receivable		1,100.00
Change fund		1,500.00
Stores		34,612.92
Due by capital		53,276.46
		113,226.55

Accounts payable		26,300.00
Unused tickets		1,000.00
Surplus earnings, 1920	1,170.60	
1921	32,226.87	
		33,397.47
Due to general fund		52,529.08
		113,226.55

Some discussion and criticisms on the balance sheet as presented for the end of 1921 may be of service.

In the first place, exception may be taken to the manner in which Depreciation Reserve is displayed, but in the present case it would not be correct to do the same as we do with the depreciation provided to retire the debentures. This fund is not created for that purpose and cannot therefore rightly be deducted from the outstanding debentures. The department possesses assets representing the full amount of the fund, and it is therefore quite correct to display them as such.

It may also be asked why, when apparently no capital has been expended or received, the amount due by capital to revenue varies from the 1920 figure.

The 1920 figure was	53,888.74
Receipts were	1,138.99
	52,749.75
Expenditures were	526.71
The 1921 figure is	53,276.46

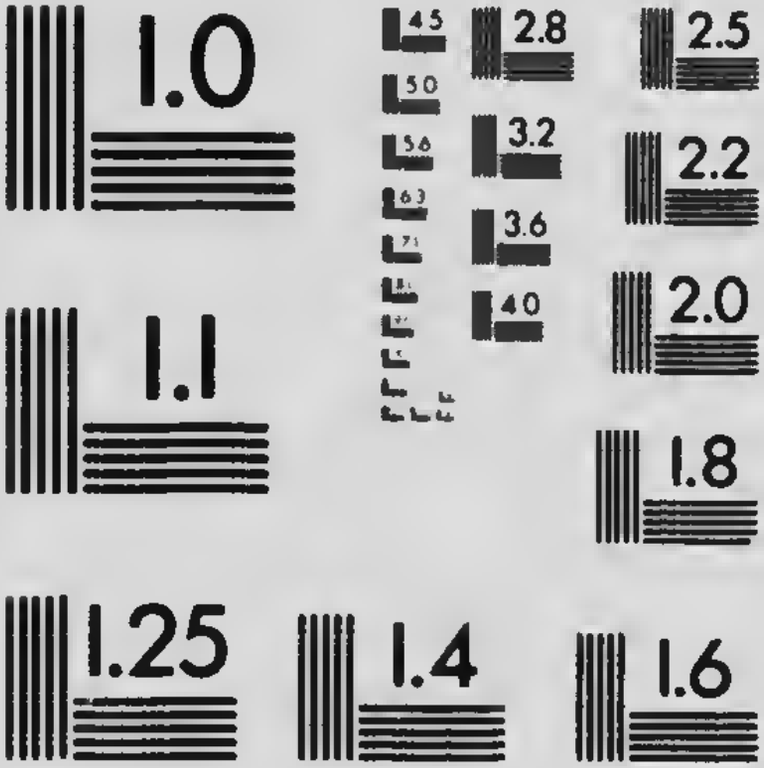
It is seen from the example that the balance due to the General Fund is the same at the end of the year as it was at its commencement, but until debentures for the over expenditure on Capital are issued, this cannot be repaid, unless the Cash, etc., on hand is sufficient, which is not so in the present case.

It is not probable either, that any street railway would be able to earn sixty-five per cent of its capitalization in any one year. If such was the case, there would doubtless be a big secret reserve, which should never be countenanced in municipal work, no matter how advisable in commercial practice.

Obsolescence probabilities should be taken carefully into consideration in criticizing this balance sheet. Is the special reserve sufficient to provide more up-to-date equipment? Critics might justly go so far as to enquire whether, in view of the development of the motor bus, the sale of the present equipment together with the amount of special

MICROCOPY RESOLUTION TEST CHART

(ANSI and ISO TEST CHART No. 2)



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depreciation, would be sufficient to replace the present plant in case at any time it was decided that motor busses were preferable.

These points are mentioned, because accountants should at all times be capable of picking up weak points in balance sheets, and to give some idea of the lines upon which criticism may be justly founded.

CHAPTER VIII.

FRONTAGE TAXES AND THEIR ACCOUNTING.

This heading in itself is somewhat misleading, as these taxes are often applied to flankages, viz., the sides of properties. There is another method of paying for local improvements, to wit, the special benefit assessment, which is so seldom availed of as to be almost negligible in effect.

Let us first see what frontage taxes may be levied for. Primarily they can only be levied for local improvements which are in part as follows:

a. The opening, widening, straightening, extending, grading, macadamising, paving or planking of any street or public lane, alleyway or place.

b. The constructing of any sidewalk, bridge, culvert or embankment forming part of highway.

c. The curbing, sodding, boulevarding or planting of any street, lane, alley, square, etc.

d. The making, deepening, enlarging or prolonging of any common sewer.

e. The constructing of any conduit for wires or pipes along any street, etc.

f. The reconstructing (but not the mere repair and maintenance) of any of the said works during the originally estimated lifetime thereof.

g. The repairs and maintenance thereof after the lapse of the originally estimated life thereof.

In cities several other works are partly or wholly paid for by means of frontage taxes, but they do not affect the accounting principles involved and need not be detailed.

From the standpoint of the accountant, the interesting work in connection with frontage taxes commences with the assessment, which, of course, is done by the assessor's department after the cost of the local improvement has been determined by the engineer's department.

The cost having been determined for a certain block which has been improved let us consider how this is to be financed.

First, provision is made to enable the council to borrow temporarily until the actual cost is ascertained. The council will then (if a bylaw of general application on the subject is in effect) pass a further bylaw fixing the proportion of cost.

The assessment to property owners having been confirmed, a schedule showing the cost to each individual becomes necessary setting out in the case of sidewalks:

1. Name of street, etc., improved.
2. Lots and blocks individualised.
3. Number of feet in each lot.
4. Total cost.
5. Cost of ends and crossings (chargeable to the city at large.
6. Total net cost.
7. Percentage borne by city.
8. Cost to city at large.
9. Cost to properties.
10. Cost per lineal foot.
11. Annual levy on properties.
12. Proportion of levy for sinking fund.
13. Proportion of levy for interest on debentures.
14. Rate of annual levy per lineal foot.

On page 84 will be found a specimen of how these schedules are prepared.

As a general rule, a smaller proportion of cost is borne by the properties improved in respect of flankages than in respect of frontages, and the schedule in question has been prepared so as to show how this is dealt with.

Usually in cities the whole cost of local improvements is borne by the properties improved, and, of course, this cost is spread over a number of years, by means of debentures for the purpose, which must bear the words, "local improvement."

In the schedule referred to, the rate of interest on bonds

is assumed at 6 per cent and the sinking fund is calculated to earn 4 per cent on the debentures for fifteen years.

Having disposed of the question of levies for the local improvements, the next problem confronting the accountant is to make proper provision for the bookkeeping consequent upon the undertaking.

The first step is to see that the necessary entries are made in the debenture register with regard to the debentures.

The next is to make the necessary entries in the book known as the frontage tax register. It is not proposed to give a specimen of this book, but it should contain all the information for future reference, which is specified in the footings of the schedule previously given.

There should then be columns showing details of the annual levies, with folio columns showing the folio in the general tax roll to which the annual levies are transferred. The total amount of frontage tax levied in the tax roll must agree with the total annual levies required by the frontage tax register.

The treasurer will then merely have to credit the correct percentage of frontage tax levies to sinking fund and leave the balance in its entirety in readiness for the redemption of the interest coupons on the debentures.

Outside of cities, sinking fund bonds are not recommended but the accounting principles are the same whether for annuity or sinking fund bonds up to this stage. The further accounting necessary for sinking funds will be dealt with in the chapter devoted to that subject.

"SCHEDULE"

Showing Details of Cost of Construction of Granolithic Sidewalks in the City of Jerusalem during the year 1914.

Name of street	Lot No.	Blk. No.	No. of lineal feet	Total cost	Cost of ends and crossings	Total net cost	Percentage borne by town	Cost to town	Cost to properties	Rate per foot (cents)	Annual levy for interest	Annual levy for sinking fund	Total annual levy	Rate per lineal foot	REMARKS
				$ c	$ c	$ c		$ c	$ c		$ c	$ c	$ c		
Mark	End		20	1 00	14 00										
"	1	13	50												
"	2	13	50												
"	3	13	50	210 00		210 00	Fr. 33⅓	70 00	140 00	16 66	8 40	6 98	15 38	5 07	
"	4	13	50												
"	5	13	50												
"	6	13	50												
"	End		32	21 40	21 40										
"	Crossing		36	75 00	75 00										
"	End		32	21 40	21 40										John Avenue Intersection
"	1	14	50												
"	2	14	50												
"	3	14	50												
"	4	14	50												
"	5	14	50	302 05		302 05	Fr. 33⅓	100 68	201 37	16 66	12 08	10 05	22 13	5.07	
"	6	14	50												
"	7	14	50												
"	8	14	50												
"	9	14	31⅓												
"	End		20	11 00	11 00										
"	Crossing		26	53 00	53 00										
"	End		20	11 00	11 00										Matthew Street Intersection
"	6	15	126	88 20		88 20	Fr. 66⅔	58 80	29 40	23.35	1 76	1 47	3 23	2.54	
"	Lane		15	10 50	10 50										
"	7	15	50												
"	8	15	50												
"	9	15	50	203 35		203 35	Fr. 33⅓	67 79	135 56	16.66	8 14	6 77	14 91	5 07	
"	10	15	50												
"	11	15	50												
"	12	15	10½												
"	End		20	11 00	11 00										
"	Crossing														
"	End		20	11 00	11 00										Luke Avenue Intersection Crossing already built
"	1	5a	100												
"	2	5a	100	280 00		280 00	Fr. 33⅓	93 33	186 67	16 66	11 20	9 33	20 53	5 07	
"	3	5a	100												
"	4	5a	100												
	Totals		1800	1334 00	251 30	1083 60		393 60	693 50		11 58	31 60	76 18		
								251 30							
								611 90							

CHAPTER IX.

DEBENTURES.

WHAT ARE DEBENTURES?

> "A Debenture is an instrument issued under the seal "of a Corporation, pledging the resources of a corpora- "tion in order to secure a certain sum and providing "for the payment of interest at a specified rate until "the principal is repaid."

The word itself is derived from the Latin "Debentur," which was the first word of formal certificates of indebtedness issued by the crown to soldiers and others entitled to payment for services rendered. The first record of their use in our own Empire was the seventeenth century, when they were issued to the Parliamentary Army during the Civil War.

Accountants are often asked, "In what way does a Debenture differ from a Mortgage?" First, in the fact that a mortgage invariably recites its security in itself; whereas a Debenture is generally merely a promissory note, its security being found in legislative enactments, whether of a State, Municipality, Company or other issuing body.

Furthermore, it is generally understood in the case of Government or Municipal Debentures, that the credit of the issuing body is the security of the lender and that the term covers future revenues, and not necessarily the actual physical assets which may be the property of the borrowers. Color to this view is lent by the fact that in the City and Town Acts of Saskatchewan, no mention is made of the fact that the Municipality by issuing Debentures, ipso facto, creates a mortgage on private property contained in itself as is so commonly believed to be the case. These Acts specifically state that Debenture loans are made upon the credit of the Municipality, and provide for the annual levy of such amounts as are necessary to repay the amounts bor-

rowed. In other words, future revenues are pledged, not the Municipal assets. In Municipal work, an exception to this rule is provided in the case of Public Utilities, which are specifically secured to the lenders, who have power to take possession and sell or operate as they please. Generally speaking, however, it may be said that whilst a mortgage specifically pledges property, a Debenture only pledges future revenues for repayment.

Excluding revenue earning assets, such as Waterworks, Telephones, Electric Lights, etc., it will be easily understood that there would be no useful purpose served by securing the works for which moneys are borrowed by way of Debenture to the lender, because sidewalks, street improvements, public buildings and the like could be of very little monetary value as security. The various Municipal Acts make provision for suits against a Municipality and for the levy of special rates on the whole of the rateable property therein to meet executions arising out of such suits, which I believe can only cover such part of the debt as is in arrears.

It is self-evident that the foregoing applies to Government and Municipal Debentures only. Company Debentures may be likened to debentures issued for Municipal Public Utilities, and whilst in the first place the Revenues of issuing Companies are surcharged with their replacement, the Assets are a secondary security also. Railway Companies for instance, sometimes especially distinguish Rolling Stock Debentures from other debentures.

ISSUE OF DEBENTURES.

A debenture bears issue from its date—not its sale. This is a very important point for Accountants, for all debentures must bear interest from their date, and though this effects the sale price only so far as the accrued interest is concerned, it may vitally affect the current finances of the issuing body. For example, if a Municipality passes or sells bonds on April 1st, 1918, dated January 1st, 1919, it need take no cognisance of the issue in striking its 1918

taxes, but if on the other hand the bonds were dated April 1st, 1918, it should provide 75% of one year's interest (and principal if so provided) during 1918. Provision is made in the Municipal Acts also, for delaying the issue of bonds up to a term of four years from the date of the By-law authorizing their issue. The reason for this is apparently the variability of the money market, which may at the time of the passage of the By-law, be unfavorable.

FORM OF DEBENTURE.

It will be necessary to confine remarks on this subject to Municipal Debentures, owing to the wideness of the subject, and generally speaking, only three forms of debentures, in addition to Debenture Stock, are found in Municipal work. They are

1. Instalment Debentures.
2. Annuity Debentures.
3. Sinking Fund.

Dealing with the instalment Debenture in Saskatchewan, we find this is permitted in City, Town and Rural Municipalities, the latter class of Municipalities being allowed to issue no other form of bonds.

Towns and cities are permitted to issue any one of the three forms of bonds.

A better [illegible] of the three classes of bonds cannot be given than [illegible] ons in section 289 of the Town Act, and I will tl [illegible] te the difference between them.

"(a) In su[illegible] nner t[illegible] the principal shall be repayable "at the end of the period of years during which the de-"bentures are to run, together with interest on such de-"bentures to be paid annually or semi-annually as the "Council may by by-law provide:

"(b) In such manner that the principal and interest shall be "combined and made payable in, as nearly as possible, "equal annual instalments during the period for which "the debentures have to run;

"(c) In such manner that, without combining the principal "and interest the instalments of principal shall be of

"such amounts that, without the interest, payable an-
"nually or semi-annually, the aggregate amount payable
"for principal and interest in each year shall be as
"nearly as possible the same;

"(d) In such manner that the principal shall be repaid in
"equal annual instalments, with interest annually or
"semi-annually upon the balance from time to time re-
"maining unpaid.

"In case the indebtedness is to be payable in the manner set "out in clause (a) of the first sub-section, the by-law shall pro-"vide for raising each year during the currency of the deben-"tures:

"(a) a specific sum sufficient to pay the interest on the de-
"bentures when and as it becomes due;

"(b) A specific sum which, with the estimated interest, at
"a rate not exceeding four per cent. per annum, cap-
"italized yearly, will be sufficient to pay the prin-
"cipal of the debenture when and as it becomes due.

"In the cases set forth in c' uses (b), (c), (d) of the first "sub-section the by-law shall provide for the raising, in each "year in which an instalment falls due of a specific sum, to pay "both principal and interest when and as they become due."

COMPARATIVE STATEMENT OF PAYMENTS REQUIRED TO REDEEM $10,000.00 OF DEBENTUDES FOR 10 YEARS AT 5%

	INSTALMENT				ANNUITY				SINKING FUND			Accumulating at 4% per annum.	
Year	Principal	Interest	Total Payment	Balance Unpaid	Principal	Interest	Total Payment	Balance Unpaid	Interest	Sinking Fund	Levy for Total Levy	Balance at Credit of Sinking Fund	Year
1	1,000.00	500.00	1,500.00	9,000.00	795.05	500.00	1,295.05	9,204.95	500.00	832.91	1,332.91	832.91	1
2	1,000.00	450.00	1,150.00	8,000.00	834.80	460.25	1,295.05	8,370.15	500.00	832.91	1,332.91	1,699.17	2
3	1,000.00	400.00	1,400.00	7,000.00	876.51	418.51	1,295.05	7,493.61	500.00	832.91	1,332.91	2,600.04	3
4	1,000.00	350.00	1,350.00	6,000.00	920.37	374.68	1,295.05	6,573.24	500.00	832.91	1,332.91	3,536.95	4
5	1,000.00	300.00	1,300.00	5,000.00	966.39	328.66	1,295.05	5,606.85	500.00	832.91	1,332.91	4,511.33	5
6	1,000.00	250.00	1,250.00	4,000.00	1,014.71	280.34	1,295.05	4,592.14	500.00	832.91	1,332.91	5,524.69	6
7	1,000.00	200.00	1,200.00	3,000.00	1,065.41	229.61	1,295.05	3,526.70	500.00	832.91	1,332.91	6,578.58	7
8	1,000.00	150.00	1,150.00	2,000.00	1,118.71	176.34	1,295.05	2,407.99	500.00	832.91	1,332.91	7,674.62	8
9	1,000.00	100.00	1,100.00	1,000.00	1,174.65	120.40	1,295.05	1,233.34	500.00	832.91	1,332.91	8,814.51	9
10	1,000.00	50.00	1,050.00	Nil	1,233.34	61.71	1,295.05		500.00	832.91	1,332.91	10,000.00*	10
			12,750.00				12,950.50				13,329.10		

* End of 9th year..... .....8,814.51
Interest to end of 10th year.... 352.58
10th year Deposit 832.91

10,000.00

Table "A" exhibits the three methods of repaying a loan of $10,000.00 in ten years with interest at 5%. The Sinking Fund is required to accumulate at % per annum, and it will be seen therefrom that

A. the "Equal Annual Instalment of principal" form of bond is the cheaper to the borrower. It is not a form of bond to be at any time recommended in respect of a profit earning utility, owing to the large initial payments and small closing ones.

B. That the Annuity Bond is more expensive than the instalment bond, and less expensive than the Sinking Fund bond where the rate of accumulation of the latter is lower than the interest rate. Where the rate of accumulation on Sinking Fund is the same as the interest rate, the cost to the borrower is the same as under the annuity plan.

Annuity bonds may be issued on one of two plans:—

A. By having the coupons attached to the bonds represent in total the annual payments of principal and interest on the total amount, whereby no one bond is redeemed until the whole amount is repaid.

B. By having the amount of principal repayable each year represented by a bond, with coupons attached accordingly for interest to all the bonds. By this means the objection that all the lenders are compelled to accept a portion of their principal annually is to some extent overcome, and the original purchaser is in the position to sell the bonds of any particular year, or of a term of years. Until each bond matures the holder receives interest annually.

There is a further method known as the Serial Instalment method, whereby the annual repayment is worked out in round figures. The advantage of this is that the principal is repayable in round figures, but I have seldom seen it adopted in the west and this form is not recommended as needing too elaborate calculations for the average Municipal Treasurer.

Cities in the west prefer mostly half-yearly payments to

annual payment on bonds. Here again there are two methods to be adopted. The one makes the semi-annual payment to include principal and interest, the other so as to provide for semi-annual payment of interest with the annual payment of principal. Inasmuch as the majority of annuity bonds in the west are of the annual variety, there is no need to deal further with this phase of the subject. Nearly all sinking fund bonds provide for a depo[illegible] to the Fund once a year with semi-annual payments of [illegible]terest.

SALE OF BONDS. Whilst this is a feature of the question that does not often affect accountants at the time of sale, it materially affects them later, when discounts and premiums enter into the accounting work of the Municipality. At the same time it may often happen that accountants are asked to advise as to an interest yield when bonds are sold. This, however, is a matter of arithmetic, but it is recommended that students should make a study of all the accountancy of investment, so that they may the more readily grasp situations in their accounting work, whereby discounts and premiums have to be disposed of in the books.

There is never any variance of opinion between accountants on the question of treating bond discounts in the books, it being universally admitted that there is only [illegible] method, viz., to set up among the capital assets a heading for Debenture Discounts, which should be written down annually according to the life of the bonds on the same plan as that adopted for depreciation. In other words, if the bonds are on the instalment plan, the Debenture discount should be reduced on that plan, if on the Annuity plan, by proportionate annuity, and so forth.

As to premiums, however, there is divergence of opinion, and this is probably because in company work it is possible to credit premiums on shares sold to the current Profit and Loss account. Apparently because of this, some accountants hold that in Municipal work the same rule applies, and premiums received should be used toward paying the first ensuing year's interests charges. I hold differently, e.g

that premiums received should be spread over the life of the bonds, my reason for this view being,—

1. If a discount on bonds means that in reality the borrower is paying a higher rate of interest on his money during their life, then conversely a premium means that a borrower receiving the premium is paying a lower rate of interest.
2. If the premium is written off the first year, it is unfair to future tax payers who have to pay off the loan, just as per contra it would be unfair to ask the taxpayers in the year of issue to make up in full any discount on bond sales.

ACCOUNTING OF DEBENTURES AND THEIR REPAYMENT

There is only one entry to be made in respect of the sale of a set of Debentures, viz.,—

Dr. Cash—amount received on principal.
Dr. Cash—amount received on accrued interest.
Dr. Debenture Discount.
Cr. Debenture issued under By-Law No.....
Cr. Accrued Interest.

These entries should be made in the Capital section of the Ledger, with the exception of the accrued Interest which goes in the Revenue section.

Some accountants do not treat entries for Debentures in the manner outlined, but on the passage of Debenture By-laws, treat the amount authorized as an asset, offset by the Liability to be created. In other words, they assume that the passage of the By-law creates the asset. It is difficult to recommend this procedure, it being preferable to wait for the work to be performed before setting up any capital asset related to the Loan, thereby reducing the Capital Bank account.

So far as borrowed Capital is concerned, the Capital Assets should equal the Capital Liabilities. This is possible only by proper bookkeeping, whereby the proceeds of bonds sold are deposited in a Capital Bank account in the first

place and used only for Capital purposes, setting up any discount as corollary to the Capital asset.

Periodically afterwards adjustments must be made in accordance with repayment or Sinking Fund, which do not at all affect the proportion of assets to liabilities.

The payments of Sinking Fund deposits or debenture instalments being charged to Revenue, and provided for in current taxes or estimates, how is Capital affected? The answer is, that these payments are made by Revenue on account of Capital. To illustrate:—the annual Sinking Fund deposit of a city being $100,000 and the accumulated fund being $500,000 at the beginning of the year, the only charge to Revenue for that year is $100,000.

The accumulation of the Sinking Fund is required to be $20,000 under the By-law. We therefore charge the Sinking Fund in the Capital section with $120,000., making the Fund $620,000, and credit Depreciation Reserve with a similar amount.

In the balance Sheet we then deduct the Depreciation Reserve from the Capital Assets created from Borrowed Capital, and per contra deduct the amount of the Sinking Fund from the Debenture Liability.

Debenture stock may with benefit be given a word of explanation. Cities have power to issue stock instead of debentures in certain cases, or to convert Debentures previously issued into stock. The effect of this is very little understood, but it is in reality a very simple matter. If, for example, a holder of Debentures wishes to convert his holdings into Consolidated stock where so authorized, he must surrender his debentures to the City, and he will receive in return a certificate stating that he is the owner by registration of the amount of stock called for by his debentures. Instead of then presenting coupons for payment —coupon clipping is a big business for some investors in Municipals—he will be notified through the press that the interest is due and payable at certain banks and places, and he will then be paid what is his due on presentation of the stock certificate. Whilst a more convenient way of hand-

ling civic debt than coupon debentures, both from the point of view of the borrower and of the lender, it generally proves more expensive owing to advertising costs, fiscal agent's fees, etc. Usually cities having stock arrange with banks to act as their agents both for registration and payment, and the cities themselves keep no record of the individual amounts held by stockholders. The city makes provision for funds to be in readiness to meet claims for interest, etc., at the appointed times, the bank acting as fiscal agent seeing to the individual application of these funds. Just as cities making deposits to coupon accounts on due dates find invariably a balance unclaimed on the account, so there invariably will be unclaimed amounts in possession of the bank on stock interest payments. These amounts are usually shown in balance sheets as a trust asset offset by a liability of matured payments not yet made.

There is yet another form of debenture, which, although not actually known by that name is a debenture none the less, e.g., a Treasury Bill. A Treasury Bill is nearly always a short term debenture, used to finance unrealized current assets, such as arrears of taxes, and usually takes the form of a discount, although not always. These have, in many cases, been shown as Capital Liabilities, but this is decidedly incorrect. As a rule, we find provision that where Treasury Bills are issued pending the liquidation of unrealized current assets, the latter are hypothecated to the lender, and in such case the proceeds of the liquidation are placed in a special trust account at the bank pending the maturity of one or more of the Bills.

CHAPTER X.

SINKING FUND ACCOUNTS.

Probably no department of city finance and accounting is as little understood as that appertaining to sinking funds. In an examination of a Canadian Provincial Society of Chartered Accountants held some years ago, the main test in the final municipal paper was a requirement to take the balance sheet of the sinking fund of a municipality that could not qualify as a city on account of lack of population, and put through the actual transactions of the fund for the year, drawing up a balance sheet thereafter. Not a single correct answer was turned in, and not only was this the case, but the candidates sent in a formal objection to the paper as being "unfair" in that it was outside the usual run of municipal accounting work. How this can be the case when every city of any size has funds and reserves to be invested, passes comprehension. It is also very difficult to understand how a final candidate can ask the examining body to certify that he is qualified to practice as a Chartered Accountant, when he has only a nodding acquaintance with this very important subject.

Let us examine the whole purpose of the Sinking Fund before considering how to record transactions in connection therewith.

As generally understood, a Sinking Fund is a creation by bodies, whether corporate or otherwise, for the purpose of meeting obligations which mature at future dates. It may, however, be for many other purposes, such as the creation of a reserve for insurance, or for special depreciation, or for obsolescence, or for the accumulation of funds for the purchase of annuities, amongst others.

In its generally accepted term, a Sinking Fund is created by the deposit of a certain sum of money annually in order that they may grow by means of compound interest, to such a sum as will enable the depositor to meet a liability

which will mature at the expiration of a term of years. Later herein, Sinking Funds for other purposes will be described.

One of the first essentials to a proper set of Sinking Fund books is a reliable set of tables of amounts required to be set aside annually, and their compounded increases. The most satisfactory the writer has found are those prepared by Colonel Oakes, or Archer's Tables for repayment of loans. This latter work is published by Shaw & Sons, London, England. A treasurer of a Sinking Fund should, however, be sufficiently versed in elementary actuarial science as to enable him to dispense with tables in case of need, and this chapter is written on the assumption that the reader possesses such knowledge.

Let us now consider what effect the creation of a Sinking Fund has on the finances of a city.

In the first place, in order to authorize the creation of a Sinking Fund in its generally accepted term, a loan has to be secured, providing for repayment in one lump sum at the end of the period for which the money is borrowed. In creating the loan, it is the duty of the city to protect the lender to the extent of making provision for repayment by such means that no hardship is inflicted on the taxpayers in any one particular year. It would never do, for instance, for a city to be in a position to say to a lender (even if the lender was gullible enough to agree to the proposal), "We will collect the money needed to repay your loan in the taxes for the year in which it is due." Consequently, provision is made prior to the issue of debentures or stock, whereby a certain sum is set aside annually, earmarked for repayment of the loan. Of course no city would dream of setting aside money in this manner, without seeing that it was earning interest. The rate of interest to be earned must also be decided, and varies according to localities from four to five per cent. This is an important factor as will be seen from the fact that the sum required to be set aside annually to redeem a loan of $1,000,000 at the end of 40 years, if no interest was contemplated, would be $25,000,

whereas if provision was made for its accumulation at four per cent only $10,523.49 would be required, and if five per cent was decided on as the rate of accumulation, the figure would further be reduced to $8,278.16. The discrepancies in this respect are more pronounced at 50 years

It is very necessary that it should be distinctly understood that a Sinking Fund is a Trust of the most rigid nature, and that it should, as such, be very strictly safeguarded. The appointment of trustees for the Sinking Fund cannot be too strongly urged, and care should be taken to see that Sinking Fund Trustees are as far removed from the influence of the council as possible. This does not mean that a city commissioner should not act as a trustee but it does mean most emphatically that where he accepts such an appointment, the terms of his appointment should leave him absolute independence of action. In practice it is found that the city treasurer is the logical man to act as treasurer of the Sinking Fund under the direction of the trustees.

Duties of Trustees. Whilst these are generally specifically set out in the by-law calling for the creation of the trust, it may be well to give an outline thereof.

First, trustees are expected to receive such moneys as the city pays over to them, and to so invest them as to have funds in their possession to retire debentures when they mature.

Therefore, they must be advised of

1. The amounts and dates of maturities.
2. The amounts of annual deposits.
3. The rates of accumulation.

Here be it noted that trustees can only be responsible for the proper fulfilment of their duties if they are paid the annual deposits. They cannot be responsible if the city does not carry out its share of the duties in this respect.

This raises the point as to how arrears of deposits should be treated, and shown in the Sinking Fund balance sheet. It is customary to show the full amount of the liability of the city to the trustees as an asset, even though deposits

may be some years in arrears. The wisdom of this course is debatable. It would seem to be correct only in cases where the trustees are in possession of indisputable evidence that the deposits with interest will be fully paid. It is questionable, in view of the fact that an overdue debt should never be treated as 100 per cent good, and of the further doubt as to the recourse of the trustees against the city, whether such overdue payments should show as an asset at all. It is fully realized that the fact that the city is in arrears must be displayed, and also that it is absolutely necessary for the trustees to keep accounts of overdue deposits, and to assume that they will bear interest. It is also beyond dispute that by reason of these arrears, the trustees are not in a position to say that they are in possession of the funds necessary to the retirement of debentures at maturity, and this fact should be made clear. It would therefore seem to be better in such cases, to leave the liability of the city out of account in the balance sheet of the trustees, which would show an actual deficiency of investments to requirements, and to put as a footnote a remark stating that the city is in arrears of deposits according to details to be given in a separate schedule. This may be looked on as radical, but it is none the less sound practice.

The trustees being advised of the following loan, what information should they display in their books?

$100,000 5% debentures, issued July 1, 1920, repayable July 1, 1940. Annual deposit $3,358.17, rate of accumulation 4%.

A Fund record should be installed in the following form, for every loan:

FUND RECORD

Date of Deposit Month	Year	Total of Fund Forward	Interest at 4% to July 1	Total of Fund July 1	Deposit July 1	Total after Deposit	Interest to Dec. 31	Total Dec. 31
July 1	1921				3,358.17	3,358.17	67.16	3,425.33
July 1	1922	3,425.33	67.16	3,492.49	3,358.17	6,850.86	137.01	6,987.67
July 1	1923	6,987.67	137.01	7,124.68	3,358.17	10,482.85	209.65	10,692.50
July 1	1924	10,692.50	209.65	10,902.15	3,358.17	14,260.32	285.20	14,545.52
July 1	1925	14,545.52	285.20	14,830.72	3,358.17	18,188.89	363.77	18,552.66
July 1	1926	18,552.66	363.77	18,916.43	3,358.17	22,274.60	445.49	22,720.09
July 1	1927	22,720.09	445.49	23,165.58	3,358.17	26,523.75	530.47	27,054.22
July 1	1928	27,054.22	530.47	27,584.69	3,358.17	30,942.86	618.85	31,561.71
July 1	1929	31,561.71	618.85	32,180.56	3,358.17	35,538.73	710.77	36,249.50
July 1	1930	36,249.50	710.77	36,960.27	3,358.17	40,318.44	806.36	41,124.80
July 1	1931	41,124.80	806.36	41,931.16	3,358.17	45,289.33	905.78	46,195.11
July 1	1932	46,195.11	905.78	47,100.89	3,358.17	50,459.06	1,009.18	51,468.24
July 1	1933	51,468.24	1,009.18	52,477.42	3,358.17	55,835.59	1,116.71	56,952.30
July 1	1934	56,952.30	1,116.71	58,069.01	3,358.17	61,427.18	1,228.54	62,655.72
July 1	1935	62,655.72	1,228.54	63,884.26	3,358.17	67,242.43	1,344.85	68,587.28
July 1	1936	68,587.28	1,344.85	69,932.13	3,358.17	73,290.30	1,465.81	74,756.11
July 1	1937	74,756.11	1,465.80	76,221.91	3,358.17	79,580.08	1,591.72	81,171.80
July 1	1938	81,171.80	1,591.72	82,763.52	3,358.17	86,126.69	1,722.56	87,844.25
July 1	1939	87,844.25	1,722.56	89,566.81	3,358.17	92,924.98	1,858.43	94,783.41
July 1	1940	94,783.41	1,858.42	96,641.83	3,358.17	100,000.00		

It is necessary to display all the information given on the form suggested, because the interest accrued to the end of the year is needed for the balance sheet, and the exact standing of the fund at date of deposit, which will be the date of maturity also, is imperative in order to prove the correctness of the annual accumulations. It will be seen that the form provides for the exact amount required at the exact date of maturity. The reader will understand that information to the following effect should be at the head of every sheet of the funds record.

CITY OF ———

BOND ISSUE NO.

BY-LAW NO.——— FOR $100,000

INTEREST ACCUMULATION 4%

Date of Issue, July 1, 1920. Date of Maturity, July 1, 1940.

It is not necessary that this form should supply the name of the purchaser or the price obtained. It should be noted that the Sinking Fund Trustees are not responsible for bond redemptions, this being the function of the city, and it is therefore incumbent on the city to keep record of the holders of all registered bonds, sale price, etc. The custom is for the trustees to take up matured bonds, but strictly speaking, they should pay the city the needed moneys, and let the city make its own redemptions. It is possible to provide otherwise in the bylaws creating trustees, but there is a point to be raised in this connection as to whether this can be done legally without the consent of the holders.

Naturally, the other main function of trustees of Sinking Funds is the more difficult one to perform satisfactorily, viz., the investment of moneys in their care, in such securities and in such manner that the investments will mature in such rotation as will provide funds for maturities of city bonds at due dates.

The subject is large, and much may be written upon it. The main points to be taken into consideration, however, are

that, first, no investment for longer periods than the city bonds to be redeemed should be made; second, that investments should only be made in trust securities, and third, that the interest earnings must be sufficiently high to pay accumulations and the expenses of managing the funds.

This having been decided, we should know at a glance when we should have to meet our obligations. We should therefore have a summary of the Fund's record or register in somewhat similar form to the following. Several western cities have adopted the plan of including in their Annual Financial Statement a "Statement showing years in which debentures are required to be redeemed." This is an excellent scheme, but as it includes annuity and instalment debentures, with which the trustees have nothing to do, it only fulfils their requirements partially. Therefore it is suggested that the index of the Fund's Record should be in the following form.

By-Law No.	Date of Issue	Date of Maturity	Amt. of issue
1049	June 6, 1908	June 6, 1938	$ 50,000.00
1124	Feb. 1, 1909	Feb. 1, 1929	104,242.50
1129	July 1, 1919	July 1, 1949	500,000.00

and so on

But it is advisable that a further summary be prepared by taking the information given in the index, and segregating the years in such manner that all bonds maturing in any one year are shown.

To enable this to be done, it is suggested that the first part of the record be set apart for this purpose, and a page or part of a page devoted to each year. Thus, if the first maturities occurred in 1920, the first page should be devoted to 1920 maturities followed by maturities of each succeeding year. Then, the trustees can tell from information supplied to them in the following form exactly what they need:

1920 Maturities.

By-Law 942	Jan. 4	25,000.00	
By-Law 963	Feb. 1	35,000.00	
By-Law 1046	Dec. 1	105,000.00	
			165,000.00

1921 Maturities.

By-Law 943	Jan. 4	35,000.00	
By-Law 965	June 1	70,000.00	
By-Law 1035	Dec. 1	140,000.00	
			245,000.00

and so on throughout the total funded debt of the city.

It is imperative that this information should be supplied to the trustees periodically, and that it should be accompanied by information showing what moneys will be, or should be, in their hands to enable them to discharge these liabilities of the city.

Now it will be in order to discuss which form of security is best suited to the investment of the sinking funds. It goes without saying that the ideal investment would be such as would mature in entirety, just before the maturity of the corresponding liability, but this is never completely practicable, and in consequence we must look for the next most suitable forms. We have to consider the comparative merits of

Sinking Fund Bonds.
Annuity Bonds.
Instalment Bonds.

for the purpose of sinking fund investments.

A sinking fund bond maturing in priority to the requirement of the fund is the most preferable because there is no re-investment required. As a matter of fact, however, except in abnormal financial times, sinking fund bonds are only issued by large units, such as Governments and Cities, and the interest rate is lower.

There is little to choose from the point of view of the trustees between annuity and instalment bonds, because each requires the annual re-investment of part of the original investment.

Only in exceptional circumstances should sinking fund moneys be invested in debentures of the home city. If any exceptions are made, it should only be for a purpose such as the assistance of the city by temporary purchase in times when the bond market is unfavourable, or again when the bonds of the home city are offered at a considerable discount

on the original selling price. Investments in the bonds of the home city may be honestly likened to a man who obtained a loan on his farm to be repayable at the end of five years, and who agreed to set a sixth of the money required to redeem the loan at maturity on one side each year, and who at the end of three years executed a second mortgage on his farm to himself to the amount of the money then set aside. This comparison may be far fetched, but it is contended that, save in exceptional circumstances, a city is prejudicing the chance of repayment to the holder by these tactics. In proof of this, it may be well to consider what the effect would be if trustees invested in nothing else but the bonds of their own city.

First mortgages are permissible by law in all Provinces of Canada as investments for trust funds. They are deprecated as investments for sinking funds except in exceptional circumstances, for reasons which must be obvious. One of the questions (taken from actual practice) at the end of this volume sets forth very clearly the dangers accruing from this class of investment.

We will now decide that bonds of governments, municipalities, and kindred authorities offer the most desirable form of investment for sinking funds, and discuss the best method of recording these in such manner that the information the trustees should possess is at all times forthcoming in the most concise form obtainable.

We shall require an Investment Register adapted to the three forms of investments we propose to make. It must record the amount of principal to be recovered, as dissociated from the interest earnings, and whilst the suggestion following entails considerable work in the first place, it is thoroughly effective, and strongly recommended.

The investment register should be divided into two parts. The first part should take care of the individual investments, and the second should form a concise resume of the moneys incoming each year. Thus the first part should have each page in somewhat the following form:

CITY OF ———

SINKING FUND TRUSTEES

INVESTMENT NO. .....

$100,000 Province of Ontario, 6% Annuity Bonds
Issued July 1, 1920. Maturing July 1, 1920.
Purchase price 98 and accrued interest.
Purchased October 1, 1920.

	Amount Brought Forward	Interest to July 1	Value of Investment June 30	Principal due July 1	Value of Investment July 2	Interest to Dec 31	Value of Investment Dec. 31	Total annual payment	Interest	Principal	Date paid
1920	100,000.00				100,000.00	3,000.00	103,000.00				
1921	103,000.00	3,000.00	106,000.00	7,586.80	92,413.20	2,772.40	95,185.60	13,586.80	6,000.00	7,586.80	July 2
1922	95,185.60	2,772.39	97,957.99	8,042.01	84,371.19	2,531.14	86,902.33	13,586.80	5,544.79	8,042.01	
1923	86,902.33	2,531.14	89,433.47	8,524.53	75,846.66	2,275.40	78,122.06	13,586.80	5,062.27	8,524.53	
1924	78,122.06	2,275.40	80.397.46	9,036.00	66,810.66	2,004.32	68,814.98	13,586.80	4,550.80	9,036.00	
1925	68,814.98	2,004.32	70,819.30	9,578.16	57,232.50	1,716.98	58,949.48	13,586.80	4,008.64	9,578.16	
1926	58,949.48	1,716.98	60,666.46	10,152.85	47,079.65	1.412.39	48,492.04	13,536.80	3,433.95	10,152.85	
1927	48,492.04	1,412.39	49,904.43	10,762.02	36,317.63	1,089.53	37,407.16	13,586.80	2,824.78	10,762.02	
1928	37,407.16	1,089.53	38,496.69	11.407.74	24,909.89	747.30	25,557.19	13,586.80	2,179.06	11,407.74	
1929	25,657.19	747.30	26,404.49	12,092.21	12,817.68	384.56	13,202.24	13,586.80	1,494.59	12,092.21	
1930	13,202.24	384.56	13,586.80					13,586.80	769.12	12,817.68	

If the investment is of the sinking fund variety, the form can be much modified, as follows:

INVESTMENT REGISTER.

$100,000 City of Montreal, 6% Bonds due July 1st, 1930.
Date of Purchase, Oct. 1, 1920. Date of issue, July 1, 1920
Purchase Price 99 and accrued interest.
Accumulation 4%. Interest payable Jan. 1 and July 1.

	Amount of Montreal Fund on July 1		Amount of Investment	Interest due Jan. 1	Date of payment	Interest due July 1	Date of payment	Value of Investment Dec. 31
1920			100,000.00					
1921	8,329.10	July 6	100,000.00	3,000.00	Jan. 2	3,000.00	July 2	103,000.00
1922	16,991.36		100,000.00	3,000.00	Jan. 2	3,000.00	July 2	103,000.00
1923	26,000.11		100,000.00	3,000.00	Jan. 2	3,000.00	July 2	103,000.00
1924	35,369.21		100,000.00	3,000.00	Jan. 2	3,000.00	July 2	103,000.00
1925	45,113.08		100,000.00	3,000.00	Jan. 2	3,000.00	July 2	103,000.00
1926	55,246.70		100,000.00	3,000.00	Jan. 2	3,000.00	July 2	103,000.00
1927	65,785.67		100,000.00	3,000.00	Jan. 2	3,000.00	July 2	103,000.00
1928	76,746.20		100,000.00	3,000.00	Jan. 2	3,000.00	July 2	103,000.00
1929	88,145.15		100,000.00	3,000.00	Jan. 2	3,000.00	July 2	103,000.00
1930	100,000.00		Paid	3,000.00	Jan. 2	3,000.00	July 2	Nil

These forms assume that all payments are made promptly and that there is no need for excess interest. Where deemed advisable, it is a simple matter to add columns taking care of this feature, which does not enter into the bookkeeping principles being discussed and need not therefore be dealt with.

Discounts on purchases of bonds whilst recorded, must be dealt with in the general books of the fund, not in the subsidiary books.

The first column is intended to show the amount in the Montreal Sinking Fund and a certificate of this should be obtained annually.

In the example given, both sets of bonds were bought at a discount, and we had better decide how these shall be treated. On the annuity bonds the discount was $2000 and on the sinking fund bonds $1000.

The effect of these discounts is simply that the City of Montreal and the Province of Ontario are paying us these amounts as advance interest over and above the rate payable by the bonds. The question of whether annuity or sinking fund bonds does not affect the principle at all. It is, therefore, apparent that we have collected the amount of discount as a prepaid earning, and we have to decide as to the manner in which this shall be spread over the life of the investment.

The first entry necessary, however, is to establish the fact of the pre-collection in the books. A journal entry as under is therefore made:

City of Montreal bonds	$1,000.00	
Advance Earnings		$1,000.00

Discount on purchase of $100,000 City of Montreal Bonds.

To write down the amount necessary each year is a matter of some complication. It will readily be seen that it is inequitable to write off one-tenth a year (although this is a method largely followed) because $100 on 1921 account is a very different matter to receiving $100 in 1920, on interest not due till 1930. We must therefore decide on the right plan to adopt.

That known as the annuity plan is the most generally approved. Under this plan, we take the rate of interest carried by the loan, which in this case is 6%, ascertain what the annual payment necessary to retire a loan of the amount of the discount at the end of the life of the investment would be, which in this case is $135.87, and take the amount of principal to be repaid as the amount of excess interest earned by the investment. In this case the figures under this plan are:

1921	75.87
1922	80.42
1923	85.25
1924	90.36
1925	95.78
1926	101.53
1927	107.62
1928	114.08
1929	120.92
1930	128.17

Even this is not actuarily correct, but is so nearly so that further search for accuracy is unnecessary.

Premiums. Having seen the best manner of treating discounts, we naturally turn to their opposite, premiums. A premium has the converse effect of a discount, and this is to reduce the amount of interest earned.

Taking the example under consideration, it would appear that the table of writing down should be reversed, and that the premium should be written down by $128.17 the first year, and reduced proportionately in succeeding years.

The accounting of both discounts and premiums affects the interest earnings.

It will be recollected that the discount was set up in our books as an anticipated profit, and that it would therefore appear on the credit side of the ledger. The journal entry necessary each year is in consequence:

1921 Discounts on Investments	75.87	
Dr. to Earnings		75.87
For premiums		
1921 Earnings	128.17	
Dr. to Premiums on Investments		128.17

In case the trustees at any time should sell bonds bought at a discount at an advance over their purchase price, what would the necessary entries be?

Taking as an example the bonds bought at 99: we will assume they are sold at par plus accrued interest in 1924. As three years' entries of reduction had been made there would be $757.46 to the credit of discounts. This then becomes a realized profit for 1924, and may in consequence be transferred to the credit of earnings.

On the other hand, supposing bonds bought at a premium were sold at par. A direct loss has been sustained, which should be charged to the earnings of that year.

This latter item brings us to realize, however, that it is not a function of those in charge of sinking funds to traffic in bonds. Their duty is to invest. It is sometimes advisable, however, to take a profit when it is offered, as for instance, the 1917 Victory Loan, where the interest rate was five and one-half per cent., and previous bonds bearing five per cent. were accepted as payment, at a rate which afforded a chance of an increased interest earning.

We have now discussed pretty thoroughly the functions of the sinking fund custodians, and the subsidiary records essential to the proper handling of their affairs. Let us take a set of skeleton books and work them through for a year.

ASSETS

Investments	Purchase Price	Book Value	Accrued Interest	Ma-tures	Rate	Value at date
War Loan 1917	50000.00	50000.00	2750.00	1932	5½%	52750.00
Manitoba Stock, 1918	75000.00	75000.00	4500.00	1934	6 %	79500.00
Victory Loan, 1918	100000.00	100000.00	5500.00	1923	5½%	105500.00
City of Montreal	50000.00	49537.83	3000.00	1929	6 %	52537.83
Other Municipals	50000.00	49578.14	3000.00	1928	6 %	52578.14
Rural Telephones	100000.00	100000.00	7000.00	1935	7 %	107000.00
	425000.00	424115.97	25750.00			449865.97
Deposit due Jan. 1, 1921						134327.00
Uninvested Funds						8437.80
						592630.77

LIABILITIES

Requirements	580814.77
Surplus earnings	11816.00
	592630.77

It is well known, of course, that the first five securities

in reality are half-yearly interest bearing investments, but have been shown as annual interest payers for demonstration purposes, and the requirements have been calculated as upon a single loan of $4,000,000 maturing in 1937, with accumulation at 4 per cent. The Rural telephone bonds were purchased January 1st, 1920.

The funds register will show the annual deposit to be as displayed on the assets side, and the amount required as on the liabilities side.

We will assume that on January 1, 1921, $150,000 of Saskatchewan Farm Loan Bonds were purchased at par, bearing 5% interest, redeemable at three months' notice.

The cash book for 1921 will be as follows:

	Dr.	Cash
1921		
Jan. 1	To Balance Forward	8,437.80
	City Deposit	134,327.00
	Int. 1917 War Loan	2,750.00
	" Manitoba Stock	4,500.00
	" Victory Loan	5,500.00
	" City of Montreal	3,000.00
	" Municipals	3,000.00
	" Telephones	7,000.00
	Principal Telephones	3,979.46
	Bank Interest	432.60
		$172,926.86

	Cr.	
Jan. 1	By Farm Loan Bonds	150,000.00
Dec. 31	By Secretary, Salary	500.00
	By City Expense	100.00
	By Balance	22,326.86
		$172,926.86

It is usual for these cash books to have double columns, one used for principal, and the other for interest on the debit side, and one of the credit columns for capital and the other for expenses.

The balance of credit in the cash book should always represent the uninvested funds on deposit at the bank.

It is very improbable in a fund of this size that no exchange will be shown as expense. This, of course, is deduction from earnings direct.

The following will be the journal entries required:

Earnings 23,232.59		
Dr. to Sinking Fund		23,232.59

"Accumulation at 4 per cent. on amount of requirements at Dec. 31, 1920, for the year 1921."

The next entries will be made in recording the earnings for the year, and in this respect it may be well to mention that there are two ways of treating accrued interest. One is to add the amount to the investment when the interest is due, and the other is to open a special account in the general ledger for accrued interest, leaving the investment register to record details, which are controlled by the accrued interest account in the general ledger. For the purposes of this illustration the latter method will be adopted.

We therefore make the following journal entries in respect of earnings for 1921.

Schedule of interest earnings, 1921:

1917 War Loan	2,750.00
Manitoba Stock	4,500.00
1918 Victory Loan	5,500.00
City of Montreal	3,000.00
Municipals	3,000.00
Rural Telephones 7% on $96,020.54.. ..	6,721.44
Saskatchewan Farm Loans	7,500.00
	32,971.44

Accrued interest 32,971.44		
Dr. to Earnings		32,971.44

"as per details above."

The bank interest is, of course, credited direct from the cash book to interest earnings. A further entry is necessary to record the 1921 deposit due January 1st from the city.

Dr. City 134,327.00		
Cr. Fund.....		134,327.00

After all these entries have been transferred to the ledger, the trial balance will be as follows:

		Dr.	Cr.
Uninvested funds as at Jan. 1 .	8,437.80		
Receipts	164,489.06		
	172,926.86		
Withdrawals	150,600.00		
		22,326.86	
Accrued interest as at Jan. 1.	25,750.00		
Receipts	25,750.00		
Accruals		32,971.44	
Secretary's salary		500.00	
Expense		100.00	
1917 War Loan		50,000.00	
Manitoba Stock		75,000.00	
1918 Victory Loan		100,000.00	
City of Montreal		50,000.00	
Other Municipals		50,000.00	
Rural Telephones		96,020.54	
Saskatchewan Farm Loan Bonds		150,000.00	
Requirements as at Jan. 1....	580,814.77		
Accumulation	23,232.59		
1921 deposit due	134,327.00		
			738,374.36
Earnings, Balance Jan. 1	11,816.00		
Journal	32,971.44		
Cash Book	432.60		
	45,220.04		
Less accumulation	23,232.59		
			21,987.45
City deposit due Jan. 1, 1922..		134,327	
Unexpired discounts			884.03
		761,245.84	761,245.84

It will be seen from this trial balance that no adjustment has been made to the discount account, and that the assets are shown at their face value, in contradiction to the method adopted in displaying the original state of the fund. We shall now proceed to adjust the discount account, and then take off a balance sheet in a different form, which,

though equally correct and frequently used, is not as effective a form as the original one.

The discount account should be reduced by $42.62 in respect of municipals and $40.21 in respect of Montreal Stock. As these figures represent the moiety of the discount which is co-incident to 1921, it is of necessity an earning, consequently the discount must be reduced and the earnings increased by $82.83.

This leaves our balance sheet as under:

Assets:

Investments (at face value)	
1917 War Loan	50,000.00
Manitoba Stock	75,000.00
1918 Victory Loan	100.000.00
City of Montreal	50,000.00
Other Municipals	50,000.00
Rural Telephones	96,020.54
Sask. Farm Loan Bonds	150,000.00
	571,020.54
Less unearned discounts	801.20
	570,219.34
Accrued interest	32,971.44
City Deposit due Jan. 1, 1921	134,327.00
Uninvested Funds	22,326.86
	759,844.64
Requirements	738,374.36
Surplus earnings	21,470.28

The reconciliation of the surplus earnings account is:

As per trial balance	21,987.45
1921 Discounts	82.83
	22,070.28
Less expense	600.00
	21,470.28

The reader is left to form his own judgment on the merits or demerits of the two forms of balance sheet submitted.

The foregoing can be merely a skeleton, but the principles involved in the accounting of sinking funds are explained, so that the number of investments dealt with, and the number of issues of city debentures to be retired are merely a question of detail which can be met as occasion requires in actual practice.

As previously intimated, custodians of sinking funds are often required to deal with other trust funds besides those for the retirement of plain straight-forward bonds. One of the most frequent is in connection with frontage tax commutations.

These occur by means of properties commuting their annual frontage taxes by means of a cash payment. Incidentally, such commutations should never be allowed once the debentures for the work have been issued.

Customarily, these taxes can be commuted by payment of the original assessment less such payments of principal as have already been made. For example, let us take a property assessed for 20 years on a work for which its share is $1,000, the rate of interest on the bonds being 6% and the bonds being on the sinking fund plan, and it will be seen how complicated this work is. The ratepayers annual assessment would be

Sinking Fund	33.58
Inerest.....	60.00
	93.58

After three years he can commute by paying in to the city $1000—(33.58x3)=$899.26. At the time he pays this money in the city has $104.21 to the credit of his particular assessment in the sinking fund, so that in all they have $1,003.45 in hand to retire a loan of $1,000 seventeen years hence. Not only this, but the city has to pay 6% interest on the $1,000 of the original loan. Let us see how this acts to the loss of the city.

The amount required to be in hand at the time of commutation to accumulate to $1000 in 17 years @ 4% is $513.37 so that we have $490.08 surplus at the time of commutation.

Assuming the possibility of being able to get a return of 6% on this sum in each of the 17 years, we should find—

The City pays in interest	60.00
and receives	29.41
Loss per annum	30.59

But this assumes that no part of the surplus principal is available for paying interest, which is not the case. The surplus principal has also to be reduced annually in order to have a clean sheet at the maturity of the bonds. Therefore we have to find out how much principal could be used annually for this purpose, and the same plan as that used in writing down discounts on investments has to be called into service. In this case, the first year's reduction is $17.36 so that the loss to the city is

	30.59
less	17.36
	$13.23

if this method of calculation is approved.

It will be seen, therefore, that commutations, apart from monetary loss to the city, are a possible source of confusion to sinking fund custodians, and that the remark that they should not be allowed after the debentures are issued, is thoroughly justified.

Then, sinking fund trusts are sometimes availed of to create insurance reserves both for fire and accident. The object of these reserves is to save taxation for these purposes in future years.

Let us assume a city with one hundred items on its insurance schedule, on which it pays say $40,000 in fire premiums annually to protect city property to the amount of $3,000,000. The plan adopted where cities attempt to carry their own insurance is to take up insurance on the schedule to say, half the amount, and to pay in half the premiums to the insurance reserve for investment and accumulation. Suppose in the present case the largest risk was half a million. The city should, under these circumstances, pay the trust 50 per cent of the premiums annually

until there is this sum accumulated, after which the annual accumulations should be sufficient to keep the fund up to this amount without the necessity of further premiums, and with good luck and few damages, it will not be very long before the city can carry its own insurance entirely. The fact that the element of chance is very great in the early years of such a fund causes most cities to be very guarded in deciding to adopt the plan.

The same is true in respect to trusts created for loss in respect of damages for accidents whether to employees or the general public.

Then there is often need for the creation of reserves for obsolescence or special depreciation. In these cases the life of assets has been arbitrarily reduced in comparison to the bonds from the proceeds of which they were constructed, because either newer or more efficient machinery has been decided upon or that the wastage of assets is faster than anticipated.

The investment of all funds for such purposes is customarily entrusted to the sinking fund officials. With the exception of frontage tax commutations, they involve no special principles. All that is necessary is to enlarge the operation of the books in such manner that the different funds can be easily recognized. There is no need to earmark the investments as being the property of this or that fund, so long as the amount of the funds is known.

CHAPTER XI.

BALANCE SHEETS

THEIR PREPARATION AND INTERPRETATION

The form of Balance Sheet best suited to city municipalities is a much debated subject. Some still hold, for instance, that assets should be separated into:

Remunerative and realizable.
Remunerative and unrealizable.
Unremunerative and unrealizable.

but the majority of professional opinion today holds that the Double Account balance sheet most nearly fulfils all requirements.

But whilst a single balance sheet may be so designed as to display in total the whole of a city's municipal resources and liabilities, modern thought holds, and holds rightly, that this should be supported by other balance sheets complete in themselves, and that these supplementary or component balance sheets require certain schedules to support them, if the whole affairs of the city are to be displayed in such manner that the average man, not merely accounting or financial experts, shall be able to intelligently interpret them.

Practically all city balance sheets should be drawn in such manner that the affairs of the city apart from the utilities, can be as easily ascertained as if there were no utilities. Co-relatively, the balance sheets of each of the utilities should be drawn on exactly the same lines as if they were privately instead of municipally owned. Then again, the whole city balance sheet should be so welded together that the relationship of the city to the utilities can be readily interpreted, and vice versa.

This having been decided, we find that in order to give proper reflection of these factors, we need

1. A consolidated balance sheet.

2. A balance sheet showing the position of the city apart from the utilities.
3. Balance sheets of each utility individually.

These balance sheets should each be subdivided as between capital and revenue.

Taking capital first, and working backwards so as to build up our consolidated balance sheet, we find that for each utility we require on the assets side:

Capital Outlay.
Less Depreciation represented by
Sinking Fund Reserve
Repaid Debentures
The amount of capital funds used for revenue purposes

and on the liabilities side:

Debentures authorized
Less Unsold
Less Sinking Fund
Less Repayments
Appreciation, if any
Donations by revenue to capital
Accounts payable

Exactly the same information is required in respect to the affairs of the city apart from the utilities, excepting that more details will enter into the composition of this balance sheet.

Let us take a specimen set of these supplementary balance sheets and weld them into a consolidated sheet. One of a small western city is taken as an example, so that actual figures can be used and explained.

ELECTRIC LIGHT AND POWER DEPARTMENT

Capital Assets.

Capital outlay as per capital account	$432,617.68
Less depreciation represented by	
Sinking Fund Reserve	49,254.80
	383,362.88

Due from Revenue Account	1,301.12
	384,664.00

Capital Liabilities.

De . s	431,053.00
Less Sinking Fund	49,254.80
	381,798.20
Revenue contributions to capital	879.20
Accounts payable	1,986.60
	384,664.00

Where does the amount of the revenue contributions to capital come from?

In order to answer this question, it is necessary to find a supporting schedule respecting capital expenditures for this department. This should disclose that:

Debentures were issued as above and all sold..	$431,053.00
That there has been expended, as shown by the books, the amount of	431,738.48
The capital expended as above was	432,617.68
The difference between the last two figures is	879.20

This sum has therefore been expended on capital out of revenue which for some reason has not to be returned to revenue.

But, how can Revenue owe Capital $1,301.12 if this is the case? Let us eliminate $1,986.60 from the capital assets and remove the accounts payable from the liabilities. What do we find the standing to be?

We shall find assets of	381,376.28
" bilities and donations of	382,677.40
....	1,301.12

There be one explanation of this, and that is that Revenue has used capital moneys to this extent, and must account for it. If there were a capital bank account for this utility, and no capital moneys were ever used for revenue purposes, or vice versa, we should find the capital bank account containing this sum.

The statement of capital expenditure which is a sup-

porting schedule to this balance sheet will further show that the moneys borrowed are over-expended by $685.48, and this figure proves itself in the balance sheet.

Capital Assets	$383,362.88
Less Donation	879.20
	382,483.68
Liabilities	381,798.20
	685.48

WATERWORKS DEPARTMENT.

Capital Assets

Outlay as per capital account		1,168,442.10
Less Depreciation represented by		
Sinking Fund Reserve	67,330.66	
Debentures repaid	70,637.74	
		137,968.40
		1,030,473.70

Capital Liabilities.

Debentures		1,198,489.00
Less Unsold	59,253.00	
Less Sinking Fund	67,330.66	
Less Repayments	70,637.74	
		197,221.40
		1,001,267.60
Accounts Payable		482.89
Revenue Contributions to Capital		1,060.85
Due to Revenue		27,662.36
		1,030,473.70

Here we find that the exact opposite is the case to what occurred with the Electric Light and Power Department, in that apparently a large amount of Revenue moneys have been used for Capital purposes.

We shall again have to turn to a supporting schedule if we want to know the reason for this.

We shall find the capital expenditure to be ..	$1,167,381.25
Of which there is unpaid as above	482.89
	1,166,898.36
And the debentures sold are	1,139,236.00
Leaving the cash over-expended as	27,662.36

The difference between the capital outlay in the balance sheet and that in the supplementary statement of capital borrowings and expenditure is $1,060.85, which is the contribution or donation of revenue to capital. If research was made, in some previous year no doubt there would be found an item or items in revenue account to correspond with this figure, which really represents a capital asset created out of the Profit and Loss account, or revenue account, of this utility.

GAS DEPARTMENT.

Capital Assets.

Outlay as per capital account		551,851.86
Less depreciation represented by		
Sinking Fund Reserve	62,716.25	
Debentures repaid	47,118.21	
		109,834.46
		442,017.40
Due from Revenue		45,730.47
		487,747.87

Liabilities.

Debentures		566,245.00
Less Sinking Fund	62,716.25	
Less Repayments	47,118.21	
		109,834.46
		456,410.54
Real Estate Appreciation		30,690.00
Accounts payable		25.45
Revenue contributions		621.88
		487,747.87

Another factor here appears which on the face of it would seem as though the amount shown to be due from revenue is erroneous, viz., the appreciation reserve, which, as a matter of fact, has nothing to do with the case. The appreciation reserve only exists by reason of an arbitrary inflation of capital, and if the capital asset was reduced by its amount, it would of necessity cease to appear on the other side as a contra.

What has happened is easy to prove. Capital moneys have been diverted to some other purpose, presumably revenue, and we will examine the schedule of borrowings and capital expenditure for corroboration.

We find the amount borrowed to be	566,245.00
and the amount expended is	520,539.98
	45,705.02
We also know from the balance sheet that capital owes	25.45
And that there has been diverted	45,730.47

which is the amount shown to be due or owing by revenue.

The proof of capital outlay in the balance sheet is as under:

Expended as above	520,539.98
Appreciation reserve.....	30,690.00
Contribution from revenue	621.88
Capital outlay as per Balance Sheet	551,851.86

The foregoing three utilities are all that the city in question, which it may be said, was christened "The town born lucky" by Kipling some years ago, possesses, but the reader will be just as well able to grasp the accounting principles involved, if not better, as if Chicago had been taken for demonstration.

The next component of the balance sheet is the city apart from the utilities—in other words, the general account. We find the capital accounts herein displayed as under:

GENERAL FUND.

Assets.

Capital outlay as per capital account, General			1,352,046.18
Capital outlay as per capital account, Local Imp'mt.			637,148.72
			1,989,194.90
Less depreciation represented by			
Sinking Fund Reserve	166,894.36		
Sinking Fund Special	4,527.54		
Debentures repaid	51,548.64		
			222,970.54
			1,766,224.36
Bank Capital Account			1,151.49
Sinking Fund Surplus			299.18
Due from Revenue Account			68,811.10

Liabilities.

Debentures:			
General		1,137,972.47	
Local Improvements, city share		414,135.26	
		1,552,107.73	
Less Repayments:			
Local Improvements	10,254.33		
General	30,564.08		
	40,818.41		
		40,818.41	
		1,511,289.32	
Local Improvements:			
Property share	405,822.59		
Less Repayments	10,730.23		
		395,092.36	
		1,906,381.68	
Less Unsold:			
General	147,503.00		
Local Improvements	21,387.00		
		168,890.00	
		1,737,491.68	

Less Sinking Fund	171,421.90	
	1,566,069.78	
Accounts Payable	4.05	
Real Estate Apprc. Reserve	241,220.00	
Rev. Contrib. to Capital . .	28,893.12	
Sinking Fund Surplus . .	299.18	
	1,836,486.13	1,836,486.13

There are several items in this balance sheet worthy of note.

The first is that Local Improvements are kept and shown separately, a very desirable state of things. It is also desirable to separate that part of the Local Improvements which is being paid for by the city from that which the properties are paying for, which is not done herein.

It is further evident that much of the work for which Local Improvement Bonds have been issued has not been performed, as witness the following figures

Asset	637,148.72	
City Liability		414,135.26
Property Liability		405,822.26
		819,957.85
Less Unsold	. . . . .	21,387.00
Deficit	. . . . 161,422.13	
	798,570.85	798,570.85

In one large Canadian city some years ago, it was found that a fictitious asset was being shown in the fact that in addition to the cost of the work, deferred assessments on properties for their share of the repayments was displayed. This, of course, was radically wrong, but it created a deal of discussion at the time the citizens' league discovered it. The argument in favour of the idea was that, although the city would eventually own the asset, it did not pay for it, which has nothing in either fairness or finance to support it.

Instead of $1,151.49, there should be $69,962.49 in the capital bank account. Clear proof that moneys have been diverted from capital to current purposes.

Had the Double Account system been in force right along, this could not have happened without the council being aware of the diversion, but as a matter of fact the segregation of capital from current bank accounts only took place in the year to which this balance sheet refers.

A question may be raised as to why the Sinking Fund surplus earnings are taken into the general balance sheet, and again why capital should have the benefit. It is debateable whether the first part of the question should be allowed, some authorities holding that surplus earnings of the Sinking Fund are the property of the city, others holding that they should be reserved until maturities of bonds are assured redemption. But the answer to the second part of the question is undoubtedly that, if they belong to the general account at all, Revenue, which made its appearance possible by paying its deposits annually, is entitled to take it.

In this connection it may be timely to mention that in some provinces, subject to Government approval, surplus earnings of Sinking Funds, or so much of them as will leave a margin of safety, may be transferred to the credit of current revenue account. Such action should never be taken, however, unless the surplus is a cash surplus, and there is no liability of the city to the fund, in which latter event the surplus would be a paper if not a straw one. Subdivisions taxes overdue are no adequate security for payments overdue in respect of Sinking Fund deposits. Unfortunately, however, many balance sheets of cities appear to consider them one hundred per cent. good.

The consolidated capital balance sheet may now be taken off as on pages 126 and 127.

There presumably is no necessity to explain that in actual practice the balance sheet would not be made up in this form. Details have been given in several instances just in order to enable the reader to trace each figure in the Consolidated Balance Sheet back to its constituents. The items, Due from Revenue, Accounts Payable, Revenue Contributions and Capital Surplus, would only be given a line

each in an actual balance sheet, and there is no need to subdivide Sinking Fund and Redemptions, and unsold bonds up, one line being sufficient for each, which would naturally reduce the volume of the balance sheet very considerably.

Our next piece of work. Revenue, we shall not find so simple.

As with the Capital section, we will start with the supplementary balance sheets first.

We find Electric Light shows:—

BALANCE SHEET

ELECTRIC LIGHT AND POWER

REVENUE

Assets.

Consumers Accounts Receivable	4879.54	
Less Bad Debt Reserve	296.17	
		4,583.37
Insurance Premiums Unexpired		132.46
Due from General Fund.....		40,053.96
		44,769.79

Liabilities.

Due to Capital Account	1,301.12
Sinking Fund Payments Unpaid	39,060.33
Debenture Interest accrued	1,166.66
Consumers Deposit Reserve	2,560.10
Accounts Payable	681.58
	44,769.79

In analysing this statement. the thing that stands out most glaringly is that instead of allowing the Electric Light and Power Department to pay its own deposits to the Sinking Fund. the General account has been diverting the operating profits of this utility to its own use. This is an excellent example of the need for each utility paying its own debts and not allowing its earnings to make up for financial stringency in other departments.

It will be observed that the amount shown to be due

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CAPITAL ASSETS:

	Capital Outlay	Depreciation Represented by Redemptions and Sinking Fund	Present Book Value
General Fund	1,989,194.90	222,970.54	1,766,224.36
Electric Light and Power Department	432,617.68	49,254.80	383,362.88
Gas Department	551,851.86	109,834.46	442,017.40
Waterworks Department	1,168,442.10	137,968.40	1,030,473.70
	4,142,106.54	520,028.20	3,622,078.34
Union Bank of Canada			1,151.49
Sinking Fund Surplus Earnings			299.18
Due from Revenue Account:			
General		68,811.10	
Electric Light and Power		1,301.12	
Gas		45,730.47	
		115,842.69	
Waterworks		27,662.36	
			88,180.33
			3,711,709.34

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ONSOLIDAT BALANCE SHEET

CAPITAL.

CAPITAL LIABILITIES.

resent k Value	Debentures	Issued	Unsold	Sold	Sinking Fund and Redeemed	Outstanding
6,224.36	General Fund	1,957,930.32	168,890.00	1,789,040.32	222,970.54	1,566,069.78
3,362.88	Electric Light and Power Dept.	431,053.00		431,053.00	49,254.80	381,798.20
2,017.40	Gas Department .	566,245.00		566,245.00	109,834.46	456,410.54
0,473.70	Waterworks Dept. ..	1,198,489.00	59,253.00	1,139,236.00	137,968.40	1,001,267.60
2,078.34		4,153,717.32	228,143.00	3,925,574.32	520,028.20	3,405,546.12

,151.49	Accounts Payable:—		
299.18	General	4.05	
	Electric Light and Power	1,986.60	
	Gas	25.45	
	Waterworks	482.89	
			2,498.99
	Capital Surplus comprising:—		
	Revenue Contributions:		
	General	28,893.12	
,180.33	Electric Light and Power	879.20	
	Gas	621.88	
	Waterworks	1,060.85	
			31,455.05
	Depreciation Reserve:		
	General.....	241,220.00	
	Gas	30,690.00	
			271,910.00
	Sinking Fund Surplus		299.18
			303,664.23
709.34			3,711,709.34

from Revenue to Capital is here displayed as a liability to offset the corresponding asset in the capital section.

It will also be noted that in the capital section of the balance sheet, no asset seems to appear as a contra for the liability of Revenue to Sinking Fund. This is probably correct accounting, as it is assumed to have become a part o the reserve when the liability is set up, but it would be better practice instead of showing the amount of the reserve as $49,254.80 to have the figure subdivided into

Sinking Fund Investments	10,194.47	
Due by Revenue to Sinking Fund .	39,060.33	
		49,254.80

or, if the fund actually accumulated is not in the shape of investments, to use what terminology is actually necessary to describe the exact situation.

It is customary to show consumers deposits in the Revenue section, as they are almost always used as working capital.

GAS DEPARTMENT.

REVENUE.

Assets

Consumers Accounts Receivable	9531.80	
Less Bad Debt Reserve	2637.32	
		6894.48
Insurance Premiums Unexpired		3.12
Meter Inventory		1667.91
Due from General Fund.....		99654.60
		108,220.11

Liabilities.

Due to Capital	45,730.47
Sinking Fund Payments Unpaid	43,175.33
Debenture Interest Accrued	3,230.36
Debenture Principal Unclaimed	1,914.67
Consumers Deposit Reserve	6,563.51
Accounts Payable	7,605.77
	108,220.11

The General Fund Item indicates that the Gas Department is a great Revenue earner. It is also very evident that the General Fund has taken full advantage of the fact by corralling all surplus earnings over operating expenses, not even allowing the plant sufficient to pay its fixed charges.

The natural gas department in the city under consideration offers an excellent example of the adage that "The exception proves the rule" that utilities should be self-supporting and no more.

In the present instance, the city sells gas at a cheaper rate than is possible in any other city in America—far cheaper—and yet made a profit of approximately fifty per cent on its total sales for the year under consideration after charging up all carrying charges.

That Nature was kind enough to provide this wonderful free supply of gas is the cause of the exception.

But the city was making no preparation for the time when the gas field would play out, as the history of natural gas the world over shows they do give out. It realized this fact the year after the Balance Sheet under consideration was prepared, and decided that a very considerable proportion of the annual earnings of this utility should be put into a reserve against the contingency of gas supply extinction, in the hope that when such occurred, the city would be in a position to instal an artificial gas plant to serve its inhabitants. A really wise piece of financial foresight if ensuing councils will only continue this policy.

The profits in this case are in reality a donation from nature, to which the residents of the city are entitled, thereby giving the proof to the rule by its exception.

Why in this department, should there be a meter inventory? No reason can be advanced for this. If meters are a capital asset, and they are purchased from revenue funds, they should be included as part of the Capital Expenditure, and offset either by a claim against revenue, or by a contribution to capital, whichever fits the case. If their purchase is charged through revenue the latter de-

scription applies. If the reverse, of course Capital will be indebted to Revenue for their cost.

WATERWORKS DEPARTMENT.

REVENUE.

Assets.

Due from Capital		27,662.36
Consumers Accounts Receivable	6472.54	
Less Reserve for Bad Debts	1009.42	
		5,463.12
Insurance Unexpired		34.09
Chemical Inventory		937.40
Due from General Fund		21,926.14
		56,023.11

Liabilities.

Sinking Fund Payments Unpaid		45,112.75
Debenture Interest Accrued	6652.28	
Debenture Principal Unclaimed	2651.74	
		9,304.02
Accounts Pay		1,606.34
		56,023.11

There is no comment needed on this statement other than that as in the Gas Department, debenture interest accrued is calculated from the due date of the bonds to the end of the year, so as to bring the accounts of the department right up to date of the balance sheet.

Debenture principal unclaimed is an unusual feature in a balance sheet, and in the case under consideration it happeed to be that the City Sinking Fund was the dilatory creditor. This supports the argument that unless under exceptional circumstances, the Sinking Fund should not be permitted to buy the bonds of the home city. As a matter of fact, the sinking fund trustees in this case would know that to collect the principal would have an adverse effect upon the current finances of its own city. It will later be seen that the situation in this respect is even more serious when the General Fund statement is under consideration.

GENERAL FUND.

Revenue Assets.

Cash		17,196.31
Bank		1,999.01
Taxes Receivable		469,659.60
Tax Sale Certificates at Cost		14,907.90
Accounts Receivable		15,561.58
Schools Under Levy		144.98
Unexpired Insurances		1,254.79
Inventories		95,204.84
Revenue Deficit		40,790.32
		656,719.33

Revenue Liabilities.

Due to Capital		68,811.10
Bank Overdraft		19,597.18
Bank Bills Payable		114,200.00
Debenture Interest Accrued		13,808.91
Sinking Fund:		
Deposits in Arrears	129,573 13	
Interest thereon	10,437.15	
Loan from Fund	18,022.29	
		158,032.57
Accounts Payable		29,838.69
Schools' Demands		79,663.23
Separate School Over Levy		37.82
Tax Sale Redemptions		252.34
Workmen's Compensation Fund:		
Loan	5,596.56	
Unpaid Deposit	180.25	
		5,776.81
Stores Inventory Reserve		3,325.88
Consumers Deposit Reserve		54.41
Poundage Excess		49.75
Grants Payable		1,189.94
Due to:		
Electric Light and Power	40,053.96	
Gas Department	99,654 60	
Waterworks	21,926.14	
Trust Funds	446.00	
		162,080.70
		656,719.33

Truly there are many matters in this statement giving rise to thought, and we have a splendid example of a current municipal statement for analysis.

One of the first things that strikes the eye is the disparity between the amount of the Bank Loan and the Taxes Receivable. $131,800 does not appear to be a commensurate advance from a bank to enable a city to finance against $484,500 of taxes and tax sale certificates.

The whole theory of municipal current finance is that the municipality should be able to finance its arrears of taxes until they are collected. There must, therefore, be some good reason why the bank is only advancing the city up to about twenty-five per cent of its receivables on this head.

If we were in a position to look over the borrowings on current account for the year, we should in all probability find that the bank advanced the city a fair percentage of the total current taxes, reserving sufficient to take care of bad debts—or uncollectable taxes. In other words, they should lend the City what could reasonably be expected to be collected.

If, therefore, at the end of the year, the bank would only lend up to about twenty-five per cent of the outstanding taxes, it is reasonable to assume—and banks are as a rule fairly good estimaters, even if a little on the conservative side—that it looked upon the unpaid taxes as worth only about twenty-five per cent. of their face value.

This being the case, it is safe to assume that hitherto the City has made no provision for bad debts from taxation in its estimtes.

The argument has invariably been advanced that if land is not worth the taxes levied upon it until tax sale title can be acquired, it is worth nothing at all. This is generally true where wildcatting in subdivisions has not been indulged in, but unfortunately most, if not all, western cities have been badly bitten with the subdivision bug, and the situation displayed is met with in a more or less marked degree everywhere.

From the statement it would appear that a reserve of at the very least $300,000 should be created for uncollectable taxes, making the actual revenue deficit $340,790.32. Had this been done by means of a provision for bad debts in, say, the six years preceding, the City would not have the situation to face that it is confronted with in the balance sheet under consideration.

What would have been the effect if the City had made such a provision? It would have meant that the inside properties, those receiving the city services, would have been paying a higher tax, which they were justly entitled to pay. It would also have meant that the City would have been able to pay its [illegible] and the Schools. Which is the better and more [illegible] of finance?

Why is an [illegible] levy of the schools shown on one side of the balance sheet, and an over levy for the separate school on the other? These are in the nature of deferred charges or credits to the next year's tax revenue, but why? Take the first case:

The Separate School demand, say..	100,000.00
The City Levied	99,000.00
Under Levy	1,000.00

The City has placed $100,000 to the credit of the schools, but it is only in a position to collect $99,000. Therefore the general revenue account of the city is charged the difference of $1,000. This charge should not be made to the current year, as it may be levied for in the succeeding year, consequently it is perfectly justifiable to show it as a "prepaid expenditure" or "deferred charge to revenue" as in the case of unexpired insurance premiums. The reverse being the case with the other School Board, of course the over levy apears on the liabilities side.

We also discover that apart from being very seriously in arrears in its payments to the Sinking Fund, the revenue account of the city has actually borrowed money to the amount of $18,000 odd from it. In other words, it has asked for the return of some previously made deposits. Any financial institution would realize that the City must have

been terribly pressed for funds if compelled to resort to these tactics.

We see further, that it has even borrowed from another Trust Fund, which as a consequence will have to show an asset comprising a debt from an apparently seriously embarrassed city. Not very desirable, when later we discover that this loan represents practically all the capital of the trust fund in question.

Stores inventory reserve doubtless represents a possible loss in value. It would be preferable to show this as a deduction from the assets.

It may be asked, could not the revenue liabilities to electric light, gas and water be cancelled, and revenue be given a surplus? In order to answer this question we must look at the accounts of those departments.

We find

Gas owes Capital	45,730.47
Electric Light owes Capital	1,301.12
	47,031.59
Capital owes Water	27,662.36
Balance	19,369.23

which represents capital funds used for revenue purposes.

We also find that these revenue accounts owe their Sinking Funds, etc.

Gas	48,320.36
Electric Light and Power	40,226.99
Waterworks	54,416.77
	142,964.12

and that they also owe accounts payable

Gas	7,605.77
Electric Light and Power	681.58
Waterworks	1,606.34
	9893.69

It would be reasonable to suppose that if need be, the difference between these figures and the amount shown to be due these utilities should be cancelled, but it will be seen

when the consolidated balance sheet is prepared that this would have no effect, and that the deficit on revenue there shown is the same as in that of the City apart from the utilities. That this must be the case is apparent when one finds no surplus or deficit accounts in utility balance sheets. These are taken care of in the revenue accounts.

It is difficult to understand the item, consumers deposit reserve. The assumption is that the figure shown in the General Balance Sheet is a surplus of the controlling account over the details of the utilities, and that this surplus becomes the property of the city at large. The argument is unsound, and if such be the case, the individual utilities should take credit in their revenue accounts for any such surplus.

The consolidated Revenue balance sheet of the city can now be prepared from the subsidiary balance sheets. It is as follows:

CONSOLIDATED REVENUE BALANCE SHEET

REVENUE ASSETS.		
Cash on hand		17,196.31
Bank		1,999.01
Taxes Receivable		469,659.60
Tax Sale Certificates		14,907.90
Accounts Receivable:		
General	15,561.58	
Utilities	20,883.88	
	36,445.46	
Less Bad Debt Reserve	3,942.91	
		32,502.55
Unexpired insurance premiums:		
General	1,254.79	
Utilities	169.67	
		1,424.46
Inventories:		
General	95,204.84	
Utilities	2,605.31	
		97,810.15
Schools under levy		144.98
Revenue Account Deficit		40,790.32
		676,435.28

REVENUE LIABILITIES.		
Due to Capital		88,180.33
Bank Overdraft		19,597.18
Bank Bills Payable		114,200.00
Debenture Interest Accrued:		
General	13,808.91	
Utilities	11,049.30	
		24,858.21
Debenture Principal unclaimed:		
Utilities		4,566.41
Sinking Fund Payments unpaid:		
General	129,573.13	
Utilities	127,348.41	
Accrued interest thereon	10,437.15	
Sink. Fd. Loan and interest thereon	18,022.29	
		285,380.98
Accounts Payable:		
General	29,838.69	
Utilities	9,893.69	
		39,732.38
Grants Payable		1,189.94
School demands unpaid		79,663.23
Poundage excess		49.75
Tax Sale Redemptions		252.34
Separate School over levy		37.82
Stores inventory reserve		3,325.88
Consumers' Deposit Reserve		9,178.02
Workmen's Compensation Loan and Interest		5,776.81
Due Trust Funds		446.00
		676,435.28

There is nothing of note in the consolidated balance sheet excepting that the figures given in connection with the Sinking Fund should agree with those in the Sinking Fund balance sheet.

We have another section to construct before the consolidated balance sheet can be absolutely complete, and that is in connection with trust funds.

In the city under consideration we find them to be

Assets.

Tax Sale Fund, bank balance		603.70
Commutation Fund, bank balance		707.60
Workmen's Compensation Fund:		
Bank Balance	2,358.92	
Loan to City	3,596.56	
City Deposit	180.25	
		6,135.73
Superannuation Fund		446.00
		7,893.03

Liabilities.

As per contra—Tax Sale Fund		603.70
As per contra—Commutation Fund		707.60
Requirement—Workmen's Fund	5,818.27	
Surplus—Workmen's Fund	317.46	
		6,135.73
As per contra—Superannuation Fund		446.00
		7,893.03

The question is often asked, "Is it correct to include the Sinking Fund among the City's Trust Assets and Liabilities?" This depends on whether the Fund is in the hands of the City or in those of Trustees. If the City controls its own Sinking Fund there is some justification for its inclusion, even if the standing of it is also shown in the Capital section as a deduction from assets as depreciation, and per contra from the debenture liability. But if the fund is in the hands of trustees it is not correct to include it in the trust section under any circumstances.

It is sometimes requested that a condensed balance sheet be presented showing the total standing of the City. In this case, it would be as follows, the liability of revenue to capital being eliminated.

Capital Assets	3,623,529.01
Revenue Assets	635.644.96
Trust Assets	7,893.03
	$4,267.067.00
Capital Liabilities	3,408,045.11
Revenue Liabilities	588,254.95
Trust Liabilities	7,575.57
Surplus	263,191.37
	$4,267.067.00

Where such is the case, a reconciliation of the Surplus Account of the city should be shown, which in this case would be:

Real Estate Appreciation Reserve	271,910.00
Revenue Contributions to Capital	31,455.05
Sinking Fund Surplus	299.18
Workmen's Compensation Fund Surplus	317.46
	303,981.69
Revenue Deficit	40,790.32
As per Balance Sheet	263,191.37

This feature presented with a balance sheet has much to commend it, inasmuch as it displays the net worth of a city and what it comprises, at a glance. In the above, if appreciation is eliminated, the city would show a total deficit.

It cannot be gainsaid, however, that the double account system displays more clearly in detail than any other system, the financial workings of the city.

As before intimated, there should be several schedules supporting the balance sheet. Details of

Deferred charges to revenue and inventories,
Debentures outstanding with their maturities,
Sinking Fund accumulations by by-laws,
Capital accounts, showing under and over expenditure,
Sinking Fund payments in arrears (if any) by by-laws,

and a full statement of assessment and taxation should be given in every case.

The schools, hospitals, libraries and such extra municipal undertakings should in every case be given space in the report of the City to the ratepayers.

A resume of the work performed by each department during the year should be submitted to the Mayor, Commissioners or Board of Control, by its chief in such form that it can be made of value to the ratepayers by publication in the annual report.

Municipal reports, if complete enough to cover the subject, but brief enough to be interesting, are the best means of getting ratepayers to interest themselves in the work of their city. The argument of expense will not hold water, if reasonable economy is practised, for all municipal men know that ignorance of municipal affairs is best dissipated by the dissemination of reliable and interesting information.

Charts are invaluable in this respect and worthy of a chapter to themselves.

SCHEDULE "A"

SUGGESTED DEPARTMENTAL REGULATIONS FOR UNIFORM CITY FINANCIAL STATEMENTS

As submitted by members of a special sub-committee of Saskatchewan Municipalities.

The Annual Financial Statement of every City shall include:

Assets and Liabilities.

A Consolidated Balance Sheet, showing separately
(a) Capital Assets and Liabilities.

(b) Revenue Assets and Liabilities.

(c) Trust Assets and Liabilities.

and subsidiary to the foregoing:

(a) A Balance Sheet showing the position of the City as apart from municipally owned utilities.

(b) Separate Balance Sheet showing the position of each utility operated by the City.

(c) Statement of the Sinking Fund.

In each of the foregoing statements the relation of Capital Revenue and Trust accounts to each other shall be displayed.

Revenue and Expenditure.

The annual report of Revenue and Expenditure shall display a comparison with the annual estimates therefor, and shall be totalled in respect of each department of the city.

Schedules.

Schedules as follows shall form part of the Annual Financial Statement of every City:—

1. Showing the Assessment, Tax Rate and Levy for each purpose taxes are levied in each year, and discounts, rebates and cancellations allowed.
2. Showing the proportion of taxes collected as compared with taxes levied, for five years antecedent to the current year.
3. Showing in detail for each By-law, debentures issued, repayments and Sinking Fund in connection therewith, and the amount of debentures unpaid.
4. Showing details of debentures authorized but not sold or issued.

   Note:—All the details required under Sections 3 and 4 hereof should be subdivided so as to correspond with the subdivided Balance Sheets.
5. Where Sinking Fund payments are in arrears, a schedule of the various sums due under each By-law must be submitted.
6. Showing under and over-expenditure on Capital.
7. Showing the years in which debentures are required to be redeemed.

CHAPTER XII

GRAPHS.

Willard C. Brinton in his book, "Graphic Methods of presenting facts," urges a more extensive use of graphs in the following words:

"After a person has collected data, and studied a proposition with great care so that his own mind is made up as to the best solution of the problem, he is apt to feel that his work is about completed. Usually, however, when his own mind is made up, his task is only half done. The larger and more difficult part of the work is to convince the minds of others that the proposed solution is the best one—that all the recommendations are really necessary. Time after time it happens that some ignorant or presumptuous member of a committee or a board of directors will upset the carefully thought-out plan of a man who knows facts, simply because the man with the facts cannot present his facts readily enough to overcome the opposition. It is often with impotent exasperation that a person having the knowledge sees some fallacious conclusion accepted, or some wrong policy adopted, just because known facts cannot be marshalled and presented in such manner as to be effective . . . .

"If it were more generally realized how much depends upon the method of presenting facts as compared with the facts themselves, there would be a great increase in the use of graphic methods of presentation. Unlimited numbers of reports, magazines and newspapers are now giving us reams of quantitative facts. If the facts were put in graphic form, not only would there be a great saving in the time of the readers, but there would be infinite gain to society because more facts could be absorbed with less danger of misinterpretation."

The foregoing is the apology, if any is necessary, for devoting a chapter of this work to the subject of presenting municipal facts and figures in graph form.

Take for example, assessments. No annual report of a city should be considered complete without the presentation of a comparative statement of assessment and taxation for the previous five years.

Where simple comparisons of this nature are to be made, it is desirable to make the comparison on the basis of lines of different lengths rather than on the basis of areas, because the latter may lead the uninitiated to believe that the lines of the area are to be taken, instead of the arrears themselves.

Let us take the following figures of assessment and taxation, and proceed to put them into graph form. Our first requisite is some sectional paper, and we have then to decide what figure one section or square of the paper is to represent.

	Assessment	Taxes
1916	42,350,000	,270,500
1917	36,780,000	1,357,650
1918	32,400.000	1,375,000
1919	33,850,000	1,450,000
1920	36,500,000	1,575,000

Taking the assessments first. If, as is customary, the sectional paper is divided into tenths of inches or centimetres, we must fix a basis that will not over-run the size of the printed report. Allowing four inches for the width of the printed matter, and assuming our paper to be squared off into tenths of inches, we shall find it advisable to take 1 inch to represent 15 million dollars of assessment. This would make the longest line 4325 or 2.82 inches long.

	1500
1917	2.452
1918	2.16
1919	2.257
1920	2.433

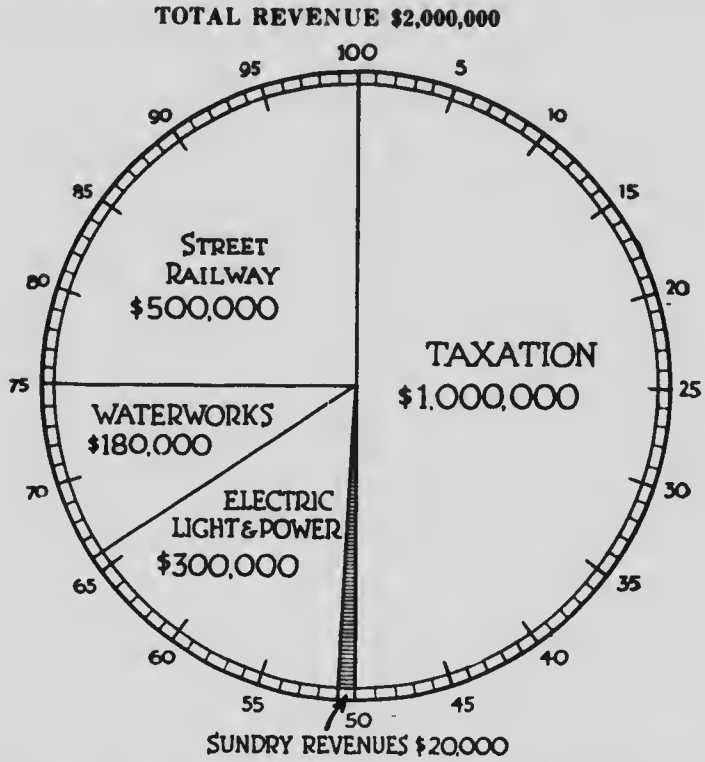
and we could then draw our graph as under:

Year	Amount	15 Mill	30 Mill	40 Mill
1916	42,350,000			
1917	36,780,000			
1918	32,400,000			
1919	33,850,000			
1920	36,500,000			

Another very important use of the graph in relation to taxation is to display where the revenues of the city come from and how they are disposed of. The best form of graph for this purpose seems to be the circle, and in order to satisfactorily prepare the circle for use in this manner, the 360 degrees may with advantage be reduced to 100 segments of the circle, so that percentages may be availed of. Let us design a graph showing how the revenue is subdivided in a city where the total income is $2,000,000 comprising:

Taxation	1,000,000
Sundry Revenues	20,000
Electric Light and Power	300,000
Waterworks	180,000
Street Railway	500,000
	2,000,000

In this illustration we find that $20,000 is the unit, and that our graph will be as follows:



The best authorities on graphic presentation are agreed that figures and wording should be placed horizontally on the graph wherever possible.

As a rule, however, it is not by any means necessary to display the above information in connection with the affairs of a city. It is generally understood that the revenues from utilities are devoted entirely to their maintenance, and therefore they do not enter into the direct cost of running the city, which is really what the general public require enlightenment upon.

The more generally used chart therefore is in connection with the application of the city revenues, apart from the utilities. The latter requires graphs of their own to dis-

play the relationship of income to expenditure, and this department will be dealt with later on.

In the preparation of a chart or graph showing the disposition of the income of a city, the net expenditure of each department should be taken. In other words, and this explanation may seem to be superfluous, each department is given credit for its own earnings, and the net expenditure is shown on the graph. Thus, supposing the gross cost of administration was $250,000, and $25,000 was received for various services rendered, $225,000 would appear on the graph. Again, assuming interest charges to amount to $150,000 and tax penalties on arrears totalled $100,000, interest would show as at $50,000 and so on.

Taking the tax levy of a city at $1,000,000 comprising:

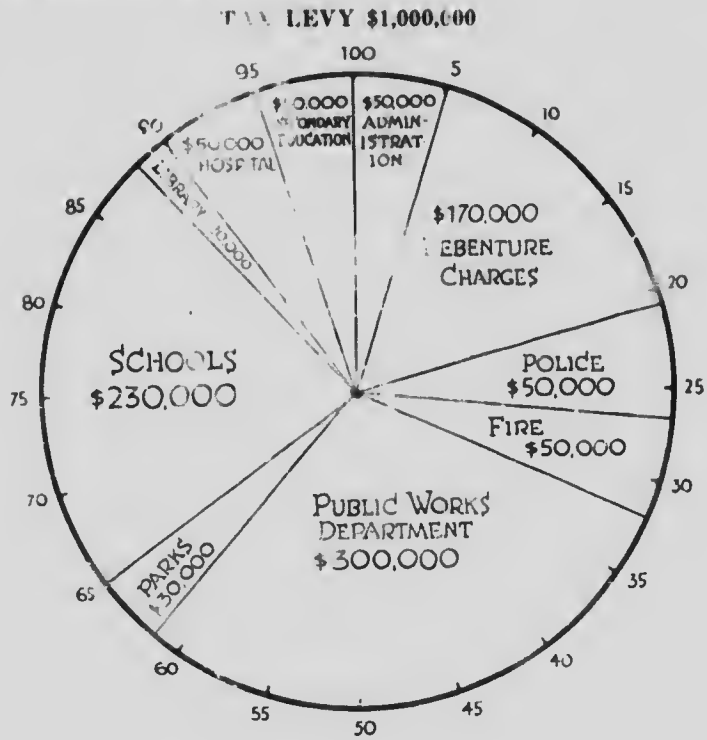
Municipal Taxes	$ 650,000
Schools	230,000
Library	20,000
Hospital	50,000
Secondary Education	50,000
	$1,000,000

The unit on the circle will represent $10,000.

Then, subdividing the municipal tax levy as follows:

Administration	$ 50,000
Debenture charges	170,000
Police	50,000
Fire Protection	50,000
Works	300,000
Parks	30,000
	$650,000

our graph will be as under:



In the foregoing illustration even amounts have been taken in order to demonstrate the system. In actual practice, three places of decimals is usually sufficiently accurate to prove definitely the percentage of expense under any department to the whole.

It is often very interesting to take the tax levy of five years ago, put it into graphic form, and compare it with the graph of the current year. The greatest increase of angle is usually found to be in connection with education, which cannot and must not be held back on account of financial stringency or for any other cause.

A series of five such graphs, arranged to show the percentage of taxes collected as compared with the levy for five consecutive years, in another very illuminating demonstra-

tion as a rule. This can be extended by showing on the graph the amount of taxes the city has to become responsible for because of tax sale proceedings. In these graphs the bar form is preferable to angular, circular or area forms of graphic presentation, thus:

LEVY $1,000,000

500M 600M 700M 800M 900M 1 million

Year | 100,000 | Tax Sale

Uncollected

$600,000 $240,000 $160,000

and so on for each of the five years in question.

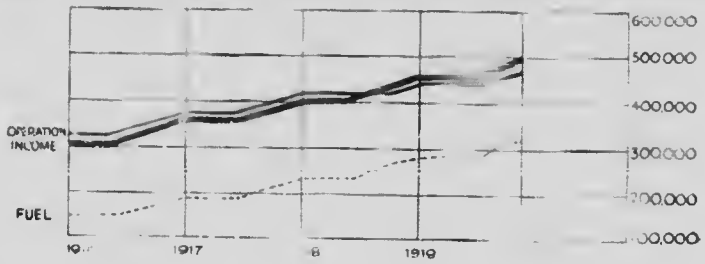
The utilities departments afford excellent opportunities for the graphic presentation of the results of their operation.

Take an electric light and power plant the figures of which are as follows for the five years to be displayed:

	Earnings	Expense of Operating	Fuel Cost
1916	300,000	330,000	150,000
1917	350,000	360,000	190,000
1918	400,000	410,000	240,000
1919	450,000	440,000	280,000
1920	500,000	480,000	320,000

the fuel cost being included in the total operating cost which also includes carrying charges. It is realized that the figures given are not likely to occur in actual practice, as the difference between fuel and total costs is not likely to have been more in 1916, 1917 and 1918 than in 1919 and 1920, but they are taken in order to give a striking example of what graphs can show at a glance.

Neither of the two forms of graphs so far discussed would be adaptable for this purpose. The section paper is again called into use, and the following would be the result.



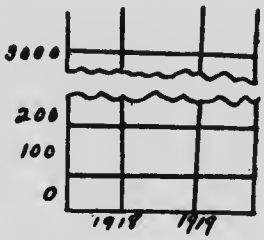
An explanation at the foot of the diagram setting forth what the different lines represent, should accompany this. It, the diagram, shows the fuel cost to have proportionately increased with the income, and that the total cost of operation has only increased proportionately and that turning the plant from a losing to a paying proposition is accounted for by increased earnings or consumption.

The scope of graphic presentation of figurative facts and comparisons is almost unlimited, but the foregoing are the means generally adopted in municipal affairs, and have been proven very satisfactory when and where they have been availed of.

With the hope of standardising graphic methods, a committee of various American professional societies was formed some years ago under the chairmanship of Mr. Willard C. Brinton, which laid down certain rules governing the presentation of facts in graphic form. These may be found in the preliminary report of the committee, which may be obtained for 10 cents from the American Society of Mechanical Engineers, 29 West 39th Street, New York. This report is well worth the study of municipal men and practising accountants generally. Some of the fundamentals laid down therein are:

> "The general arrangement of the diagram "should proceed from left to right."
>
> "When the scale of a diagram refers to dates, and "the period represented is not a complete unit, it is "better to emphasize the first and last ordinates, "since such a diagram does not represent the begin-"ning or the end of time."
>
> "The curve lines of a diagram should be sharply dis-"tinguished from the ruling."
>
> "The figures for the scales of a diagram should be "placed at the left and at the bottom."
>
> "If numerical data are not included in the diagram, "it is desirable to give the data in tabular form ac-"companying the diagram."

"If the zero line of a vertical scale will not normally "appear on the curve diagram, the zero line should "be shown by the use of a horizontal break in the "diagram, thus:



The foregoing are a few simple but effective rules culled from the report in question, and should be borne in mind by those using graphs for emphasis in connection with their work.

CHAPTER XIII.

PRE AUDITS AND COMPTROLLERS.

Whilst the first word of the title to this chapter is self-explanatory, the second can convey other meanings than that usually attached to it in relation to municipal work.

Comptrollers seem to have been first heard of in connection with the households of Royal Personages. Their duties are to receive and disburse the personages' income. This is not the function of a municipal comptroller, but of the city treasurer.

Similarly, the term must not be confused with membership of municipal boards of control, where they exist, for these are really commissioners under another name.

Strictly speaking, a comptroller, as generally understood, is nothing more than a pre-auditor, with a few added bookkeeping duties.

We can therefore first discuss what the duties of a pre-auditor are, and later those which should be added to make him a comptroller.

Naturally it is generally understood that a pre-auditor must approve all accounts before they are paid, but it is necessary that he should get certain information before he affixes his approval to accounts and it is here proposed to discuss this subject.

With regard to ordering he should know:—

First: Who ordered the goods for which the account is presented.

Second: That such person had the necessary authority to order them.

Third: For what purpose they were ordered.

Therefore a copy of the order should be sent to him.

And—he should have a list of officials empowered to order goods.

But the third item is the most important. If the goods

are to be taken into store, he should see that an ample supply was not previously on hand to carry through the year —but in general the storekeeper does not order further supplies if this is the case. If the goods are to go direct to some work in progress that fact should be disclosed.

With regard to the account he should know:

1. That the goods have been received according to the account.
2. That prices are fair and just.
3. That the arithmetical calculations are correct.
4. That they are for a legitimate purpose.
5. That they are within the appropriation.

These conditions being complied with, the pre-auditor may be considered fairly safe in affixing his approval to the account and sending it back to the treasurer for the further approval of the council where necessary.

Many accounts that are not for goods are, however, presented to the pre-auditor for approval before payment.

Salaries.—These should be verified with the appointments, and subsequent alterations.

Damages.—Only when approved by the solicitor.

Grants.—Only after comparison with the Bylaws or other authorities.

Insurance.—By comparison with the schedule.

Contingencies.—Only after proof that the expenditure is absolutely necessary and was unforeseen. If in excess of the appropriations, special authority should be obtained from the council.

Coupons.—After verification with the Bylaws.

Sinking Fund.—The same.

Coupons are usually provided for before presentation, so the actual coupons cannot be obtained for verification till after payment is made.

The above are only a few of the items which may be mentioned in order to show what supporting evidence a pre-auditor should have before passing a payment.

This official is wise if he keeps a record of each such

account, noting therein just what support he has for passing it.

In every case, he should see that the authorization or appropriation is not exceeded without commenting on the fact.

It is not necessary, of course, to say that he must at times use a little judgment. For instance, if, in a department whose appropriations were set at

Expenditure $100,000.00 Revenue $10,000.00

he found revenue had accrued amounting to $15,000 he would not be justified in refusing to approve a necessary payment which would bring the gross expenditure to $105,000 at the end of the year. He, like all other officials, must exercise some tact, but at the same time he must be firm when occasion requires.

Now, as to the Comptroller. He is required to keep general books only, but in such manner that approved expenditures are charged against appropriations. In other words, he has to open his books for the year with credits to all account for total estimated expenditure. As he approves expenditure for payment, he will charge the credit for that purpose and credit total estimated expenditure. His general books will then, or should be, a reflex of expenditure recorded in the general books of the city treasurer. This is a rough outline of the duties of a comptroller as generally understood in respect to the authorization of payments, or the pre-audit of a city's expenditures.

But generally, the comptroller is the official required to prepare all informations as to costs. In other words, he is required not only to record the amount expended, but also the quantities of work performed and service rendered. For example, he should be able to supply information as to the cost per square yard, as compared with similar work for other years. This information he should collect from the departments affected, so as to be able to supply it when needed. One official or department doing the work of preparation of costs is found much more satisfactory than allowing it to be done by the departments concerned. The latter have their remedy if they can prove the comptroller wrong.

CHAPTER XIV.

AUDIT.

The work of audit varies very considerably in different cities. Some cities rely upon internal audit to the Balance Sheet, having their own audit department up to this point. Others again have outside firms of accountants to perform the complete audit, whilst others yet, maintain their own complete audit staff.

But whichever plan is adopted, the duties are the same no matter by whom they are performed.

Practically every city has a pre-audit, it being almost universally recognized today that no expenditure of public moneys should be made without this function having been performed. This has been dealt with in the preceding chapter, and we are free to discuss the general or post audit.

Let us assume a new appointment to the position of the city auditor and discuss the duties of the appointee right down to the point where his report is presented, after the work of the year is completed.

On arrival at the City Hall, he should ask the City Commissioner or whoever is in authority for a complete list of the officials of the city who are permitted

1. To authorize the purchase of goods
2. To authorize payment for goods
3. To authorize payment for other purposes

and he should also be furnished with particulars of bylaws or regulations containing such authorizations.

He should then request a list of those authorized to receive funds, and regulations providing for their remission to and receipt by the City Treasurer.

His next visit should be to the city treasurer, who should be asked to furnish an outline of the system of city bookkeeping, and what method of cash checking from one department to another is in use.

Then he should interview the city accountant, and go through the previous year's financial statement with him, comparing the same with the general ledgers.

He, or his assistants, before beginning work on the current work of the year, should see that at the date the books were last closed

1. The Cash and Bank accounts agreed with the statement.
2. The totals of all payables and receivables agreed with their controlling accounts and with the statement.
3. Titles to properties, and other supporting documents agreed with their respective schedules or supplementary records.
4. Sinking Fund securities were as listed.
5. Liabilities in respect to debentures agree with their supplementary register, and where stock is outstanding that a certificate of the fiscal agents is produced.
6. All unsold debentures reported on hand have been accounted for.

At an early date he should interview the storekeeper to find out that the Inventory for the previous year was properly priced and on hand, and to learn the system of books used in that department.

Being in possession of this corroboration of the statement for the previous year, and if he finds it to be correct, he will be able to map out the work for the current year. But if he finds any discrepancy, he will be wise to at once put it on record, so that the responsibility may be placed where it rightly belongs, not upon himself.

He will then be in a position to call upon his assistants and to discuss the manner in which the work will be proceeded with.

Too often we find that cities are prone to look upon the checking of tax rolls as an unnecessary expense. If the new man finds that the tax rolls agree exactly with the

statement, he will know that the system in the Assessor's and Tax Collector's department is good. If there is a discrepancy which the department has been unable to locate, he should report back to headquarters for instructions. The checking in this department is mechanical, but should be done at least monthly. The assistant delegated to this work should be capable of detail checking ad lib. and yet be versed sufficiently in municipal work to see that all adjustments in the assessment and tax rolls are duplicated in the general ledger of the treasury, and it is a good plan to hold one man entirely responsible for this work.

The next part of the work, also on income, will be from the utilities. Here again a man with capacity for checking ad lib is required. His duty should be so laid down as to consist of proving the accounts rendered and to see that payment thereof is properly acounted for. It will be found that it is a good plan to check off the meter readers' books with the treasury books sometimes, even though a good system of internal cross-checking is in vogue. With mechanical bookkeeping, all this work is a matter of the amount of detail to be performed, but experience shows that adjustments overlooked in the subsidiary books are a frequent cause of disparities between the controlling accounts and subsidiary records.

The proof of the general revenues requires more practical knowledge. For instance, it would never do for an auditor to certify to receipts for licenses without knowing that the fees collected are in accordance with the bylaws, or that receipts from sales of property were not in keeping with the terms of sale. So that the man made responsible for this part of the checking should know that it is just as necessary for him to see supporting evidence of correctness, in respect to income, as it is in respect of expenditure. He must see that fees turned in from all fee earning departments are in accordance with the bylaws, that fines levied are paid in as levied and so forth. To do this he must be supplied with information, which it is a good idea to reduce

to an abbreviated form of ready reference. Searching by-laws, etc., every time is slow work.

Then there is the matter of proceeds of stock or bond sales. The auditor must see that the offer accepted by the council is lived up to by the purchaser, that the accrued interest is correctly worked out and the point of delivery is in accordance with the tender. In some cases it has been found that ignorance of the latter question has entailed considerable loss in exchange. In connection with bond sales, it is the duty of the auditor to see that discounts or premiums are accounted for according to recognized principles, as previously explained herein (see Debentures.)

It is a good thing—although not absolutely necessary where the audit is not a continuing one, to see that the debenture register is fully written up at the time the bonds are sold. Later complications have frequently been avoided by this precaution.

Another important duty devolving upon the auditor in respect of income is to see that all city officials handling money are bonded properly, and where they feel the bond to be inadequate, to give the right official the reasons for this opinion.

Generally speaking, it is good policy for the city auditor to audit all indirect activities of the city, such as schools, hospitals, libraries, etc. Revenue accruing to such institutions is the more readily proved as between them and the city where such is the case.

An instance occurs to memory where for some years the grant of the city to the library had been the same monthly sum—let us say, $2,000. The librarian had for some years been audited by a private individual, interested in library work. The city council decided at a certain date that the library accounts should be audited by the city auditor, who on checking up the library books with those of the city, found that the treasurer of the library, being short in his cash, had kited one cheque monthly for three years. The private individual could not know this, without having the

city books to refer to, but the matter at once disclosed itself when the city auditor took charge.

The checking of city cash periodically is most important. Whenever possible, this should be done simultaneously in all departments, and if the auditor has not sufficient staff for this, internal help must be secured, and so arranged that collusion is impossible. Surprise cash checks are the best protection the city treasurer and other officials have, and are never objected to by honest men.

The officials checked should know exactly to which point their cash is proved, and the auditor's initials or stamp should be given.

Extraneous cash should be taken careful note of. In other words, bearer cheques cashed for officials or others, dishonoured cheques and so on, should be listed, and the auditor should see they are not there a second time without reporting them.

A treasurer carried in his cash a year or two ago a large cheque, in favour of the city, which was in reality paying the city deposit to the Sinking Fund. This was passed as city cash, whereas it was really nothing of the sort. The instance is mentioned to show the great need for rigorous inspection of extraneous "Cash."

The chief duty of the city auditor, is, however, to see that revenues are credited to their proper department. This can only be done by auditors who possess that knowledge of municipal work which gives an intelligent grasp of accruing revenues.

A few rules governing the checking of revenues may be given at this point with advantage.

Assessor's or Tax Collector's Department.

Taxes. Proved by checking receipts into tax roll and cash book, seeing that totals agree.

Tax Certificates. Cash book to be proved with duplicates.

Searches. Duplicate receipts.

Tax Sale Redemptions. With certificate of sale, and proper duplicate receipts. Always see that the amount received is in accordance with the law.

Police.

Fines. With magistrate's orders.

Costs. With magistrate's orders.

Fees. With magistrate's orders.

Cemetery. Lot sales with register. Other charges with subsidiary duplicate receipts.

License Department. Licenses with by-laws and duplicates.

Dog tax with dog tax record and remaining tags.

Inspection Fees. With duplicate books in the various inspector's departments.

Fees to be according to by-laws.

Markets. Scales with duplicates. Rentals to be in accord with approved schedule, etc.

Treasury. All receipts under the various headings to be in accordance with the details given above. In addition, revenues paid direct to the treasury should be proved to their source in every case, with a view to seeing that all moneys accruing to the city are accounted for.

There will in every city be bad debts. These will accrue from taxation, the utilities and other sources. Before the auditor permits any bad debts to be written off he should see that the proper authority for so doing has been given. It is not to be expected that the city council will pass on all these in detail and their functions in this respect will have been delegated to the officials best qualified to give the necessary authorization. For instance, cancelled taxes should never be passed unless approved by either the Commissioners or Board of Control. Better still, by the Assessment Committee. The city treasurer should never write off bad debts for electric light unless authorized, say, by the Com-

missioners and the Electrical Superintendent. There should be no bad debts on water accounts in theory, because water rates may attach to the property, but there always are in practice, and they should always be passed on in the same manner as for electric light. In short, the auditor should see that the treasurer cancels no accruing revenues on his own authority.

To sum up, it may be said that it is the duty of the auditor to see that all revenues accruing to the city are set up correctly according to the authority by which they accrue, and once they are set up, to see that no reduction is made except by competent authority. If this is done, the receipts will be quite easy to prove.

Although the general public has a vague idea that the main functions of an auditor are the proving of cash and passing expenditure, those who know, feel that the proper supervision of income is equally, if not more important. Careless supervision of incoming revenues can be responsible for tremendous losses to municipal corporations, as has been proved time and time again. It is impossible in a short work to give the multifarious devices employed to escape paying just liabilities to municipal corporations, nor is it intended to try to do so, but the auditor can render a great public service by demanding proof that every effort has been made to secure the payment to the city of what is its just due.

Coming to the vouching of expenditure, this varies considerably to the system in operation. If a pre-audit is conducted or if there is a comptroller's department, it is possible that very little else but a balance sheet audit is necessary.

We have dealt with the general requirements of a pre-audit, and will assume this work to have been digested by the reader and that we can proceed to the post audit. Whether the pre-audit is part of the duties of a city official or of a member of his own staff makes little difference. The post audit will assume the work of the pre-auditor to be correct.

In regard to expenditures, therefore, the post auditor will not have to check authorizations. He will, however, have to see that the expenditure is charged to the purpose for which it was originally passed.

This means that he will see all accounts passed for payment are either properly recorded in the voucher journal, or that direct expenditures such as salaries, are properly recorded in the dissected cash book.

How these entries are, or should be, made, is fully explained in the bookkeeping chapter on expenditures. It therefore behooves the auditor to see that the system of books is properly carried through, and that all entries are made in accordance with that system.

He is further entitled to see a proper receipt for all payments, and this subject requires more than a passing word. A few detailed cases may explain this matter better than is possible by any other method.

Salaries. Endorsed cheques are usually taken as sufficient receipt.

Bills Payable. The cancelled bill should be examined and compared with the cheque in payment. Here be it noted that bank bills and drafts should not be allowed to be charged against the city without a covering cheque.

Accounts Payable. The cheque should not be accepted as a receipt in theory, although it generally is. A receipted account is better, but not always to be obtained. The auditor should see that the cheque agrees first with the authorization, and if there is no pre-audit, with the account.

Pay Rolls. Vouching payrolls varies with the system in force. The law calls for wages to be paid in cash, but this is seldom lived up to. Where a payroll bank account is kept, the cheques issued in payment of wages should be proved into the bank account, the cancelled cheque being sufficient receipt.

Where a cheque is issued to the paymaster for the amount of the payroll, and cashed, the wages being paid in cash, the receipted payroll should be carefully scrutinized.

This system is not recommended, even though complying with the general law respecting payment of wages, as the temptation for padding is increased commensurately with the decreased risk of detection consequent upon the payee not having to cash a cheque.

Capital. Expenditures on capital are seldom made except upon certificate of the City Engineer. Just how far the duty of the auditor goes with regard to these certificates is debatable. Some authorities hold that because nearly all contracts stipulate that the certificate of the engineer shall be binding, the auditor is precluded from vouching their arithmetical correctness. Others hold the position of the auditor to be similar to that of an investigator, and that he can go behind the certificate. Be that as it may, a city auditor should satisfy himself of the arithmetical correctness of engineer's certificates, for engineers are no more infallible than accountants. These would be checked prior to payment where a comptroller or pre-auditor is employed. The main duty of the post auditor in respect to such expenditures is to see that nothing which is properly chargeable to revenue is charged to capital, for reasons which are obvious. He must, of course, also see that the engineer is charging such expenditures against the proper capital funds. In other words, that an account for building a police station is not charged to fire halls, and so on.

At the end of each year, in some cities the auditors' appointment specifies at the end of each quarter, the auditor is required to see that all liabilities for goods received, work performed, etc., and not paid for, are properly set up in the books of the city.

This is sometimes a matter of some difficulty, and the auditor can best protect himself by checking up the stores ledger. It has often been found when this has been done, that where proper systems of checking are not in force that the reverse obtains, and that goods received have been set up as liabilities without being included in the inventories of stores. He should further protect himself by getting certi-

ficates from the heads of departments employing labour, to the effect that all wages owing have been listed to the city treasurer.

The auditor should always, before making out the balance sheet, consult the city solicitor, and see that some reasonable provision is made therein for damage claims. Some city auditors hold that this is not necessary on the ground that unsettled or undecided claims are not a liability until they are in finite shape. This would appear to have the effect of relieving the years in which the damages are sustained in case there is a long drawn out fight. Provision should be made in every year's appropriations for such claims, and the forming of an estimate of damages sustained to be charged against current revenues, would appear to be good practice and even sounder finance.

Coming down to the balance sheet, in the first place we will assume that the auditor knows exactly the form best suited to the needs of the city, and that this point need not be discussed. What supporting evidence does he require?

Let us take a specimen balance sheet and discuss this. Assets first:

Titles. Should be examined. It is no part of a city auditor's duty to be a valuer, but it is part of his duty to see that assets are displayed at cost, and that where appreciation is provided, it is offset by a reserve for this purpose. A new auditor is not bound to go behind values set up by his predecessor so long as he makes it clear that he is taking his predecessor's figures.

Stores. The stock ledger, with the storekeeper's certificate, is sufficient.

Accounts Receivable. Must agree with the subsidiary books, whether tax rolls, utility records or what not.

Bank Balances. Bank books should be supplemented by personal enquiry at the banks.

Unexpired Insurances. Policies should be proved with the insurance register, and unexpired premiums verified.

Vehicles and Horses. Certificates from the head of each department should be obtained, setting out the number of

Automobiles
Horses
Wagons
Tools, etc.

or such of them as may be. These should be checked to the previous year, and discrepancies accounted for to the auditor's satisfaction.

Coupon Accounts. These sometimes present considerable difficulty, especially where there has been a change of auditors. Every well-kept set of city books should have a subsidiary book recording coupons provided for, those paid, and those not presented. The latter should, of course, always agree with the amount in the bank account. Difficulty is most often encountered in getting a proper starting point. Once this is done and payments from the coupon account checked and recorded, the auditor need experience no difficulty in proving the balance. Where coupon accounts are kept in New York and London, the balances as given by the bankers at those points must be verified by certificate. The amount outstanding at the date of report does not of necessity agree with the books of the city, and care must be taken in this respect. For instance, a city might remit London funds on Dec. 20th to retire coupons maturing on the ensuing January 2nd. The books of the city would show the bank balance the greater by the sum remitted. On the other hand, London might pay out for coupons on December 31st and the necessary entry could not be made in the books of the city for some time thereafter. These points need careful watching by the auditor.

Sinking Fund. Verification of sinking fund assets should be made very carefully. The chapter on keeping sinking fund books sets out what is good and what is bad in this class of work, and the auditor should endeavor to see that these lines are followed. It must be distinctly under-

stood, however, that it is not any of the auditor's business to pass on the class of investments unless requested to do so. His function as an auditor is to see that the securities reported are on hand, and to this end he should have them all produced every year, and by some means identify them as having been examined by him. Some auditors use a rubber stamp which reads, "Produced for audit....19....". It is doubtful whether they have any right to do this, and the better plan is to keep their own record of what they have seen. An "O. K. with Security" in the investment register is even still more satisfactory. Accrual of earnings should be arithmetically checked.

General. In short, it is safe to say that whatever means the auditor of a commercial institution should take to satisfy himself of the correctness of the assets side of a balance sheet should be taken by the auditor of a municipal institution.

LIABILITIES

Accounts Payable. If the voucher journal has been checked carefully, the amounts shown as unpaid on capital or revenue in the balance sheet need no further verification.

Bills Payable. These require thought. Legal opinion holds that the authority to sign bills rests with the council, and that the signing of a bill impairs the borrowing capacity of a city to its extent. Generally speaking, no city official has the right to sign a note for goods, although it is often done. The Mayor and Treasurer require by-law authority to execute notes of hand for the liability of the city to the bank, and these are the only bills which should appear in the balance sheet. They should be verified by a statement from each bank as at December 31, and the auditor should see and O. K. this statement.

Debentures. The only proof of correctness available is the debenture register, which should agree with the balance sheet figure if kept correctly.

Stock. Generally, the fiscal agents of the city look after

the stock liability. A statement confirming the amount should be obtained.

Sinking Fund Requirements. These will have been verified as the audit proceeded. In case of a balance sheet audit only, the debenture register must agree. Where trustees are in charge, their books must agree with those of the city.

Accrued Debenture Interest. Arithmetical proof is all that is possible.

The foregoing are some points which may be of service. Needless to say, the auditor will not take off the balance sheet until the books are closed, and he will verify every account which show a balance with his initials or some distinguishing mark for his own protection. All the multifarious details devolving upon city auditors cannot be dealt with, but the same principles that govern the foregoing items will, if followed out in other matters, thoroughly protect the auditor, and through him, the city.

Now a few words as to what should and should not appear in the auditor's report.

Too frequently we find that auditing firms consider themselves the financial advisers of the city, as displayed by their reports. Too much care cannot be taken to avoid this. The policy of the city council is nothing to do with the auditor until it controverts the law, and in such case the auditor cannot speak too soon or too strongly.

Too frequently we find city auditors explaining the balance sheet. This also is none of their business. It is their business, however, to prepare a balance sheet that can be interpreted by the man in the street, and to this end the auditor can employ his best skill to advantage. An abbreviated piece of terminology in a balance sheet may necessitate explanation whereas without the abbreviation no explanation would be necessary.

Any action taken by the auditor in preparing bad debt reserves, extra depreciation and so forth should be explained, with a request that the city council approves his action.

The certificate given by the auditor to each balance

should protect him to the extent that such balance sheet correctly represents the standing of the city *as shown by the books.* This cannot be too strongly urged. An auditor cannot with truth make the statement contained in the previous sentence without this reservation, unless he goes back to the birth of the city—an impracticable thing.

The acceptance of the auditor's report by the city council is too frequently looked upon as a matter of routine. If the average member of a city council was told that, by the resolution adopting the auditor's report the council had absolved the auditor from responsibility, and had taken the responsibility upon himself, he would sit up and take notice. None the less, this is practically the effect of such a resolution, for it becomes, by means of such a resolution, "The financial statement of the city of .....for 192....." not merely the auditor's report.

The better plan is to refer the report either to the finance committee or to a committee of the whole, for report before taking definite action.

Let us hope that city councils will recognize that a well printed, well prepared civic report to go along with the financial statement, is one of the best means of diffusing important and vital information to the local public, and the investing public, that lies to their hand.

APPENDIX

PRACTICAL QUESTIONS AND ANSWERS.

In the ensuing pages, certain problems are taken—some from actual practice—others from examination papers.

They have been answered and discussed with candour, with the primary intention of disclosing weaknesses of practice or in principle.

It is well known to accounting examiners that advanced municipal knowledge is almost negligible in candidates who take their final examinations without previously having practical experience in municipal work.

Before the reader or student attempts to follow the solutions offered, which, it must be borne in mind, are the work of an individual guided only by his own experience and without any recognized textbooks on the subject in question, he should read the preceding pages in this volume. In nearly every case, he will then find principles enunciated, with reasons behind them, which will enable him the more intelligently to comprehend the bases on which decisions are arrived at.

If the reader takes half as much pleasure from these problems as was taken in their evolution, the author will feel amply repaid.

PROBLEM NO. 1

The Council of the Town of Largeville are of the opinion that prior to their regime, capital moneys have been diverted to current or revenue purposes, but cannot ascertain from their own officials whether this is so or not. You have been called in to investigate, and have prepared the following Trial Balance. From it show:

(a) Whether Waterworks Capital
(b) Whether General Capital
(c) Whether Electric Light Capital

Has been used for current purposes or vice versa.

Town Hall Site		$ 44,500.00	
Fire Hall Sites and Equipment		46,839.38	
Market Site and Buildings		17,131.53	
Parks		6,267.08	
Industrial Sites		30,234.53	
Sewers: Domestic	$137,981.93		
Trunk	68,957.02		
Storm	42,054.05		
		248,993.00	
Warehouse		7,000.00	
Taxes Outstanding		201,724.13	
Accounts Receivable		7,294.68	
Inventories		50,028.00	
Unexpired Insurances—General		841.19	
Current Bank Overdraft			$ 620.15
Capital Bank Overdraft			27,642.51
Accounts Payable, Current			56,447.47
Accounts Payable, Capital			18,981.93
Notes Payable, Current			30,726.82
General Debentures			311,659.85
Sinking Fund Reserve—General			28,741.13
Accrued Interest on Debentures			24,267.86
Sink. Fund Payments in Arrear—General			43,623.61
Spur Tracks		11,476.44	
Street Grading, Road Machinery, etc.		30,255.41	
Cement Sidewalks		41,730.02	
Plank Sidewalks		8,285.87	
Public School Board			29,477.77
High School Board			37,253.64
Waterworks Machinery and Power House		49,464.06	
High Pressure Main		38,164.47	

Main Connections and Hydrants	357,973.14	
Water Meters	2,865.29	
Reservoir	36,353.05	
Water Consumers Accounts	13,268.03	
Waterworks Debentures		372,315.00
Electric Light		331,053.00
Cash on hand	15,381.90	
Real Estate Appreciation Reserve..		100,000.00
Waterworks Sinking Fund Reserve		43,218.84
Electric Light Sinking Fund Reserve ...		31,728.59
General Depreciation Reserve	28,741.13	
Waterworks Depreciation Reserve	43,218.84	
Electric Light Depreciation Reserve	31,728.59	
Capital Assets, created without provision from either Revenue or Capital	28,878.88	
Reserve for Bad Debts, Waterworks		775.04
Reserve for Bad Debts, Electric Light ..		434.41
Electric Light Accounts Receivable	5,397.50	
Electric Light Sinking Fund Instalments overdue		16,040.22
Waterworks Sinking Fund Instalments overdue		19,149.56
Accrued Interest on Waterworks Debentures		8,686.86
Electric Light, Land, Buildings and Plant	173,114.44	
Electric Light, Distribution System	82,891.15	
Electric Light, Meters, Connections and Services	17,113.83	
Cemetery	6,946.59	
Balance	163,258.39	
	$1,696,102.65	$1,696,102.65

Solution to Problem No. 1

In order to properly display the facts in this case it is expedient to draw up Balance Sheets on the double account system, showing:—

1. The position of the Town as apart from the utilities.
2. The standing of the individual utilities.
3. A consolidated balance sheet.

These Balance Sheets will be as under:—

GENERAL FUND

CAPITAL.

Assets		Liabilities		
Town Hall and Site	44,500.00	Capital Bank Overdraft		27,642.51
Fire Hall, Site and Equipment	46,839.38	Capital Accounts Payable		18,981.93
Market, Site and Buildings	17,131.53	Debentures	311,659.85	
Parks	18,267.08	Less Sinking Fund	28,741.13	
Industrial Sites	30,234.53			282,918.72
Sewers	248,993.00	Appreciation Reserve		100,000.00
Warehouse	7,000.00	Due to Revenue		82,254.44
Spur Tracks	11,476.44			
Street Grading and Machinery	30,255.41			
Cement Sidewalks	41,730.02			
Plank Sidewalks	8,285.87			
Cemetery	6,946.59			
Created without provision for funds	28,878.88			
	540,538.73			
Less depreciation represented by sinking fund	28,741.13			
	511,797.60			511,797.60

REVENUE

Assets.		Liabilities	
Due by Capital	82,254.44	Bank Overdraft	620.15
Taxes	201,724.13	Accounts Payable	56,447.47
Accounts Receivable	7,294.68	Bills Payable	30,726.82
Inventories	50,028.00	Accrued Debenture Interest	24,267.86
Unexpired Insurances	841.19	Sinking Fund Deposits, etc.	43.623.61
Cash on hand	15,381.90	Public School	29,477.77
		High School	37,253.64
		Surplus	135,107.02
	357,524.34		357,524.34

357,494.34

	357,524.34		357,524.34
			357,494.34

WATERWORKS

CAPITAL

Assets		Liabilities.	
Power House and Machinery	49,464.06	Debentures	372,315.00
High Pressure Main	38,164.47	Less Sinking Fund	43,218.84
Mains, Connections and Hydarnts	357,973.14		
Meters	2,865.29		329,096.16
Reservoirs	36,353.05		
	484,820.01		
Less Depreciation represented by Sinking Fund	43,218.84	Due to Revenue	112,505.01
	441,601.17		441,601.17

REVENUE.

Due by Capital	112,505.01	Bad Debt Reserve	775.04
Consumers Accounts	13,268.03	Accrued Debenture Interest	8,686.86
		Sinking Fund Deposits, etc.	19,149.56
		Surplus	97,161.58
	125,773.04		125,773.04

ELECTRIC LIGHT.

CAPITAL

Assets		Liabilities	
Building and Plant	173,114.44	Debentures	331,053.00
Distribution System	82,891.15	Less Sinking Fund	31,728.59
Meters, Connections, etc.	17,113.83		
	273,119.42		
Less Depreciation represented by Sinking Fund	31,728.59		
	241,390.83		
Due by Revenue	57,933.58		
	299,324.41		299,324.41

REVENUE

Accounts Receivable	5,397.50	Bad Debt Reserve	434.41
		Sinking Fund Deposits, etc.	16,040.22
Deficit	69,010.71	Due to Capital	57,933.58
	74,408.21		74,408.21

CONSOLIDATED BALANCE SHEET

CAPITAL

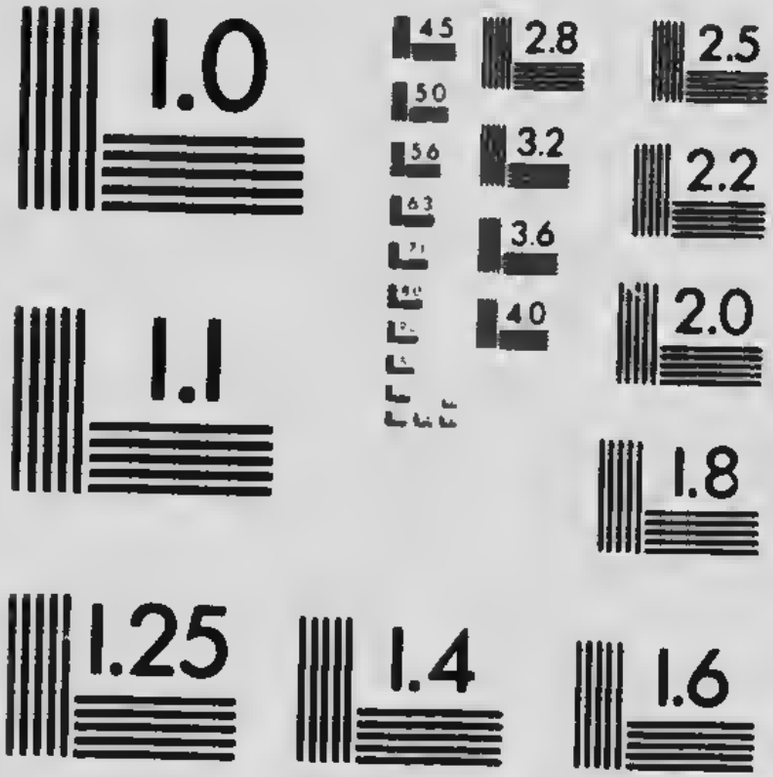
Assets			Liabilities	
Capital as per details :			Debentures:	
General Fund		540,538.73	General	311,659.85
Waterworks		484,820.01	Waterworks	372,315.00
Electric Light		273,119.42	Electric Light	331,053.00
		1,298,478.16		1,015,027.85
Less Depreciation represented by Sinking Fund		103,688.56	Less Sinking Fund	103,688.56
				911,338.29
			Bank Account	27,642.51
			Accounts Payable	18,981.93
			Appreciation Reserve	100,000.00
			Due to Revenue	136,825.87
		1,194,788.60		1,194,788.60

REVENUE

Due from Capital		136,825.87	Bank Overdraft	620.15
Taxes		201,724.13	Accounts Payable	56,447.47
Inventories		50,028.00	Bills Payable	30,726.82
Accounts Receivable:			Accrued Debenture Interest	32,954.72
General	7,294.68		Sinking Fund Deposits, etc.	78,813.39
Waterworks	13,268.03		Bad Debt Reserve	1,209.45
Electric Light	5,397.50		Schools	66,731.41
		25,960.21	Surplus	163,257.89
Cash in hand		15,381.90		
Unexpired Insurances		841.19		
		430,761.30		430,761.30

MICROCOPY RESOLUTION TEST CHART

(ANSI and ISO TEST CHART No. 2)



The Consolidated Balance Sheet in this case proves the absolute need for the detailed balance sheets, as the former only shows a net over-expenditure of $136,825.87, whereas this figure comprises

General over-expenditure	82,254.44
Waterworks over-expenditure	112,505.01
Total over-expenditure.....	194,759.45

The under-expenditure on Electric Light is responsible for the difference, and must not be taken into consideration when the council is financing its over-expediture.

Although the question does not ask for it, let us see what the effect of the issue of bonds for the above amount would be.

We should then have the following totals:

CAPITAL.

General Fund Assets..	540,538.73	Debentures.....	393,914.29
		Accounts Payable	18,981.93
		Bank Account ...	27,642.51
		Apprec. Reserve .	100,000.00
	540,538.73		540,538.73

In order to bring Capital into alignment it is therefore imperative to issue bonds for the amount of the overdraft and accounts payable, viz., $46,624.44.

This will make the total to be issued

197,459.45
46,624.44
244,083.89

assuming no immediate further expenditures on Capital are to be made.

When the proceeds of the bonds are received, the Capital liabilities and assets will be as follows:

General Assets.....	540,538.73	Debentures	440,538.73
		Appreciation	100,000.00
Waterworks Assets....	484,820.01	Debentures	484,820.01
Elec. Light Assets....	273,119.42	Debentures	331,053.00
Cash at Bank.....	57,933.58		

PROBLEM 2.

The following is the trial balance of the Town of Langleybayne at the end of 1915:

Fire Hall and Site	11,400.00	
Fire Hall and Equipment	2,322.60	
Cement Sidewalks	12,671.05	
Bridges	7,280.42	
Cash on hand	7,405.11	
General Debentures		23,250.00
Electric Light Debentures		48,165.00
Waterworks Debentures		112,332.00
Local Improvement Debentures, Sidewalks		10,152.00
Sewers Debentures, Trunk		32,124.60
Sewers Debentures, Local Improvements.		25,000.00
Sinking Fund		3,413.13
Public Scales, Asset Account	180.33	
Unpaid Taxes	12,885.85	
Athletic Park	7,000.00	
Fire Pump and Storage Basin	5,582.91	
Electric Light, Power House and Site	14,431.58	
Electric Light, Machinery	12,895.86	
Electric Light, Boilers	4,897.34	
Electric Light, Pole Lines	9,796.84	
Electric Light, Meters	3,806.98	
High School Debenture Liability		22,000.00
Sewers	44,984.43	
Sewage Disposal Plant	8,032.82	
House Connections, deferred payments by householders	5,326.38	
Town Hall and Site—Asset Account	15,298.03	
1914 Forfeited Lands Account	1,962.11	
Water Supply System	70,302.64	
Water Distribution System	31,246.28	
Water house services, town share of cost	5,326.38	
Water Meters	3,422.90	
Public School Tax Liability		2,665.98
High School Tax Liability		1,311.90
Fire Hydrants	2,326.82	
Teams and Equipment	1,171.89	
High School Contractor's Payments	21,822.34	
Bank Accounts—General	491.49	
Elec. Light, Operating		3,656.80
Waterworks Operating		1,911.20

Sinking Fund	3,413.13	
Bank Interest	1,411.98	
Dog Tags		182.75
Licenses		965.00
Cemetery Lot Sales		70.00
Scale Receipts		81.40
Town Hall Maintenance Account	372.55	
Sundry Unclassified Expenditures	135.27	
Fines and Fees		104.00
Poll Tax		116.00
Quarantine and Public Health	172.80	
Street Lighting	2,700.00	
Hydrant Rents	1,800.00	
Salaries—Secretary-Treasurer	1,800.00	
Auditor	200.00	
Assessor	100.00	
Constable	900.00	
Cemetery Keeper	300.00	
Charity	687.70	
Legal	134.56	
Police Department Expenses	156.97	
Scavenging	123.20	
Contractor's Drawbacks		1,593.23
Outstanding Cheques		2,122.85
Cemetery—Asset Account.....	2,000.00	
Maintenance Account	20.65	
Insurance	286.64	
Election Expenses	62.75	
General Fund		21,314.75
Postage and Telegrams	84.69	
Maintenance of Teams	968.45	
Sidewalks and Crossings— Maintenance Account	1,335.30	
Fire Hall—Maintenance Account	615.68	
Printing and Stationery	248.97	
Street Sprinkling	281.60	
Parks, Maintenance Account	170.33	210.90
Sewage Disposal Plant, Maintenance Act.	216.34	
Grants	292.40	
Sewers—Maintenance Account	136.50	
Electric Light—Sales.....		16,246.20
Debenture Interest	2,423.60	
Debenture Redemption ...	1,613.50	
Depreciation	1,482.50	
Coal	6,222.95	

Power H'se, salaries,wages	2,525.60	
Pole line, general wages.	1,231.25	
Gen. Operating Expense..	923.07	
Insurance	228.23	
Meter Rents		642.50
Water	150.00	
Spec. Depreciation Reserve		6,000.00
Accounts Receivable—General	289.00	
Electric Light .. .	2,001.52	
Water	1,911.20	
Waterworks—Sales		14,023.60
Spec. Depreciation Reserve.		9,000.00
Salaries and Wages	1,922.40	
Pipe Line Repairs	822.64	
Distribution Repairs	286.40	
Debenture Interest	6,024.30	
Debenture Redemption	3,224.60	
Depreciation	3,140.25	
General—Debenture Interest Account ...	3,124.00	
Debenture Redemption	3,162.50	
Surplus		29,353.56
	388,009.35	388,009.35

The Electric Light inventories of December 31st, 1915, show as on hand:

Coal	912.45
General Supplies	134.27

From the foregoing you are required

A. To prepare a statement of Assets and Liabilities.

B. To prepare the Revenue Account of the town, bringing out the surplus or net expenditure of each of the following committees, as disclosed above—Works; Finance; Cemetery, Health and Relief; Town Hall and Reception; Waterworks and Parks; Fire and Light: treating the revenue accounts of each of the public utilities as part of the operation of the committee to which they belong.

C. To show what the surplus of Assets over Liabilities at the end of 1915 consists of.

D. To explain how it may be possible for the bank account of the Electric Light operating department to be overdrawn for a larger amount than the total of the current assets thereof. (The student will notice that the Waterworks operating account agrees exactly with the amount of accounts receivable for water.)

Solution to Problem 2.

REVENUE ACCOUNT

Committee on Finance, Etc.

Bank Interest		1,411.98	
Dog Tax			182.75
Licenses			965.00
Scales			81.40
Sundry Expenditures		135.27	
Fines and Fees			104.00
Poll Tax			116.00
Salaries		3,000.00	
Legal Charges		134.56	
Police Department Expense		156.97	
Insurance		286.64	
Election Expenses		62.75	
Postages and Telegrams		84.69	
Printing and Stationery		248.97	
Grants		202.40	
Debentures	3,124.00		
Debentures, Principal	3,162.50		
		6,286.50	
Net Expenditure to Summary			10,651.58
		12,100.73	12,100.73

Town Hall and Reception Committee.

Town Hall Maintenance	372.55	

Committee on Cemetery, Health and Relief.

Cemetery Lot Sales		70.00
Quarantine and Health	172.80	
Cemetery Keeper's Salary	300.00	
Cemetery Maintenance	20.65	
Charity	687.70	
Scavenging	123.20	
Net Expenditure to Summary		1,234.35
	1,304.35	1,304.35

Committee on Public Works, Etc.

Maintenance of Teams	968.45
Maintenance of Sidewalks and Crossings.	1,335.30

Street Sprinkling		281.60	
Maintenance of Sewage Disposal Plant		216.34	
Maintenance of Sewers		136.50	
Net Expenditure to Summary			2,938.19
		2,938.19	2,938.19

Committee on Fire and Light.

Electric Light Department:			
Electric Light Sales			16,246.20
Meter Rents			642.[illegible]
Coal	6,222.95		
Less on hand	912.45		
		5,310.50	
General Expense	923.07		
Less Inventory	134.27		
		788.80	
Salaries and Wages		2,525.60	
Pole Line and General Wages		1,231.25	
Insurance		228.23	
Water		150.00	
Fixed Charges—Principal	1,613.50		
Interest	2,423.60		
		4,037.10	
Special Depreciation		1,482.50	
Profit to Summary		1,134.72	
		16,888.70	16,888.70
Fire Department.			
Fire Hall Maintenance		615.68	
Hydrant Rents		1,800.00	
Net Expenditure to Summary			2,415.68
		2,415.68	2,415.68

Committee on Water Works and Parks.

Waterworks Department.			
Sales			14,023.60
Salaries and Wages		1,922.40	
Pipe Line Repairs		822.64	
Distribution Repairs		286.40	
Debentures—Interest	6,024.30		
Principal	3,224.60		
		9,248.90	
Special Depreciation		3,140.25	
Loss, Carried to Summary			1,369.99
		15,420.59	15,420.59

Parks Department.		
Parks	170.33	210.90
Net Revenue	40.57	
	210.90	210.90
Street Lighting—General Item	2,700.00	

REVENUE SUMMARY.

Committee on Finance, etc.	10,651.58	
Committee on Town Hall and Reception .	372.55	
Committee on Cemetery, Health and Relief	1,234.35	
Committee on Public Works, etc.	2,938.19	
Committee on Fire and Light—Electric Light		1,134.72
Committee on Fire and Light, Fire Department	2,415.68	
Committee on Waterworks and Parks—Waterworks	1,396.99	
Parks		40.57
Street Lighting	2,700.00	
General Fund—Representing Tax Revenue		21,314.75
Surplus Revenue for Year	780.70	
	22,490.04	22,490.04

BALANCE SHEET
GENERAL FUND
As Apart From the Utilities
CAPITAL

Assets			Liabilities.		
Fire Pump, etc.	5,582.91		Sewers Debentures	57,124.60	
Fire Hall and Site	[illegible]		General Debentures	23,250.00	
Equipment	[illegible]		High School Debentures	22,000.00	
	19,405.51		Local Improvements	10,152.00	
Bridges	7,280.42			112,526.60	
Park	7,000.00		Less repayments during year	3,162.50	
Cemetery	2,000.00				109,364.10
Town Hall and Park	15,298.03		Contractor's Drawbacks		1,593.23
High School Asset Account	21,822.34				
Cement Sidewalks	12,671.05				
Sewers	44,984.43				
Sewage Disposal	8,032.82				
House Connections	5,326.38				
	143,720.98				
Less Debentures repaid during year	3,162.50				
		140,558.48			
Capital Assets created from Revenue:					
Scales	180.33				
Forfeited Lands	1,962.11				
Teams and Equipment	1,171.89		Donations from Revenue		3,314.33
		3,314.33	Due to Revenue		29,601.15
		143,872.81			143,872.81

REVENUE

Bank Balance	491.49	Outstanding Cheques (assumed General)	2,122.85
Cash	7,305.11	School Liabilities	3,977.88
Unpaid Taxes	12,885.85	Surplus	44,471.87
Accounts Receivable	289.00		
Due from Capital	29,601.15		
	50,572.60		50,572.60

BALANCE SHEET
ELECTRIC LIGHT
CAPITAL.

Assets			Liabilities	
Power House	14,431.58		Debentures	48,165.00
Machinery	12,895.86		Less year's repayments	1,613.50
Boilers	4,897.34			46,551.50
Meters	9,796.84		Special Depreciation Reserve	6,000.00
Pole Line	3,806.98			
		45,828.60		
Less repayments during year		1,613.50		
		44,215.10		
Due by Revenue		8,336.40		
		52,551.50		52,551.50

REVENUE

Accounts Receivable	2,001.52	Due to Capital	8,336.40
Supplies on hand	1,046.72	Bank Overdraft	3,656.60
Deficit	8,944.76		
	11,993.00		11,993.00

BALANCE SHEET
WATERWORKS
CAPITAL

Assets.			Liabilities	
Supply	70,302.64		Debentures	112,332.00
Distribution	,246.28		Less repayments as per contra	3,224.60
House Connections	5,326.38			
Meters	3,422.90			109,107.40
Hydrants	2,326.82		Special Depreciation Reserve	9,000.00
		112,625.02		
Less repayments during year		3,224.60		
		109.400.42		
Due by Revenue		8,706.98		
		118,107.40		118,107.40

REVENUE

Accounts Receivable	1,911.20	Due to Capital	8,706.98
Deficit	8,706.98	Bank Overdraft	1,911.20
	10,618.18		10,618.18

CONSOLIDATED BALANCE SHEET.

CAPITAL

Assets			Liabilities	
Capital outlay as per details			Debentures:	
General Fund		140,558.48	General	109,364.10
Electric Light		44,215.42	Electric Light	46,551.50
Waterworks		109,400.10	Waterworks	109,107.40
		294,174.00		265,023.00
Less depreciation represented by			Less Repayments and Sinking Fund	11,413.73
Sinking Fund	3,413.13			253,609.27
Current Repayments	8,000.00			
		11,413.13	Contractor's Drawbacks	1,593.23
			Special Depreciation Reserve	15,000.00
		282,760.87	Capital Surplus	15,872.70
Capital Assets created from Revenue		3,314.33		
		286,075.20		286,075.20

REVENUE

Cash on hand	7,305.11	Bank Overdraft	5,076.51
Unpaid Taxes	12,885.85	Outstanding Cheques	2,122.85
Accounts Receivable	4,201.72	School Liabilities	3,977.88
Inventories	1,046.72	Revenue Surplus	14,262.16
	25,439.40		25,439.40

TRUST

Sinking Fund Investments	3,413.13	Requirements	3,413.13

The above is the direct answer to part C of the question, viz., that the surplus comprises:

Capital	**15,872.70**
Revenue	**14,262.16**
	30,134.86

It may be asked why the Special Depreciation Reserve is not treated as part of the surplus. It is no doubt provided for a specific purpose, and for that reason should be preserved intact. It is difficult to tell from the information submitted just what it is, and it is better to keep it separate from the surplus.

The answer to part D of the question is that some of cash on hand belongs to the Electric Light department, if the books are otherwise correct.

This question is one well worth answering, although it only appears to be taken from a small size town.

PROBLEM 3

A city loses its electric light plant, which showed in the books at cost less depreciation represented by debenture redemptions at $275,000, through destruction by fire. Insurance to the amount of $200,000 was received. Replacement of the plant cost $450,000, to finance which $250,000 of debentures were issued at par. How should these facts be reflected in the balance sheet?

ANSWER. According to the question, the liability of the city on an asset costing $450,000 is $525,000, so that the question really resolves itself into a decision as to how to display the discrepancy. There can be no doubt but there is no actual asset for this $75,000, but cities very often carry debenture liabilities for which they have no actual capital assets.

For example, suppose that in order to finance a discount of $100,000 on a million dollar bond issue, a city issued further bonds of $110,000 at 92. It has no actual capital asset to offset the $110,000, but it is in such case merely providing for payment of an increased interest rate in the shape of discount on bonds, which is operative during the life of the bonds. Therefore, whilst no actual asset is created, an intangible asset in the form of a deferred charge to future revenues of the city is called into existence, and displayed as such in the balance sheet and consequently in the ledger.

The facts in the case under consideration afford a very close parallel to the latter example, and there is no doubt but that accounting practice discountenances the exhibit of a capital liability greater than the asset. Therefore by some means, the asset should be displayed as equal to the liability, but in such manner that no one may be misled.

It is suggested that the following would meet the case:

Electric Light Asset, at cost	450,000	
Elec. Light Deficiency, caused by fire	75,000	
		525,000

The deficiency will be depreciated to the repayments or sinking fund, in precisely the same manner as the tangible asset.

PROBLEM 4.

In the late nineties, a western city advanced nearly half the amount to the credit of its sinking fund on first mortgage on a skyscraper then in course of construction, for five years. The building, owing to lack of funds, was never completed. The bonds, for which the original sinking fund was created, matured and were paid out of sinking funds on account of other subsequent city borrowings. Discuss this matter, and suggest means whereby the sinking fund can be recouped.

ANSWER. Evidently, according to the question, the city has not foreclosed its mortgage. This should be done, and the property sold for what it will realize.

Apparently, the city has not even been paid interest on the mortgage, so that the sinking fund, in addition to owning a slow or inactive asset, will also be in arrears for accumulation purposes.

Let us take a concrete case.

Suppose the mortgage was $100,000 and that it was placed in 1898.

This $100,000 should have accumulated to $265,329.77 in 20 years at 5%, which we will assume to have been the amount it was required to be in order to redeem bonds maturing at that time.

Let us further suppose that in 1918 the building was sold to the highest bidder for $100,000, which would leave the sinking fund short of its requirements at that time, assuming there were no surplus earnings.

For further demonstration let us suppose that the fund had on hand $30,000 of surplus earnings in 1918, which would bring the deficit down to $135,329.77.

Legislation in at least three provinces in the Dominion exists to the effect that where it is found that a deficiency in the sinking fund is ascertained, only one method is provided for its extinction, and that is to issue debentures to cover it. It is not, in the three provinces referred to, even

legal to make up the deficiency out of current account, and rightly so, for the taxpayers of the current year are not responsible for the deficiency, and should be assisted by the revenues of future years to make it good.

Moral:—Mortgages are seldom a good thing to invest sinking funds in, even to develop the home city.

PROBLEM 5.

At the end of 1920 the Trustees of the Sinking Fund of a city found that in order to be in a position to retire $100,000 of the city's bonds in the spring of 1935, they had purchased in 1919 out of the general sinking fund moneys, only a small moiety of which appertained to the $100,000 bond issue, $60,000 of 1934 Victory Bonds, which at the time of the preparation of their 1920 balance sheet were quoted around 90. Should the bonds be shown in the balance sheet at market or cost price?

ANSWER. The general rule in accounting is to exhibit assets at cost or market price, whichever at the time is the lower. But it is not a rule incapable of variation, and undoubtedly variation is necessary in this case.

The rule referred to is accepted because it is designed to prevent inflation of profits by means of inflation of assets. Unless such a rule was in existence there would be nothing to prevent a mercantile concern inflating its closing inventories to selling instead of cost price. The rule is further designed to so provide that, in case the bottom drops out of the market for a certain class of goods, mercantile concerns should take their loss, and display the fact in their statement. If the market soared, however, cost should still be adhered to in valuing inventories, and the gain thus not be shown as anticipated profits, but the profit recorded when actually made by the disposal of the goods at the enhanced price.

In the case quoted, however, the cost or market price rule would not appear to apply, inasmuch as the inventory in this case is not of goods or assets held for sale, but, on the contrary, for retention. The tests in this case are whether the earning power of the bonds is affected, and whether the ultimate redemption of the victory bonds at maturity is questionable. As both these questions can be answered in the negative, the answer to the original question is—"Cost price."

The source from which the funds to purchase the bonds were obtained, does not enter into the question at all.

PROBLEM 6.

A city, finding that in 1910 the council had issued bonds for $100,000 for paving purposes on a 5% sinking fund plan, discovers that the pavement, originally estimated to last for 50 years, will need replacement at the end of 25 years if not before. It decides that special means must be taken to ensure the city being in a position to replace the pavement at the end of 25 years with one that will last until the original bonds mature. What means would you advise the council to adopt in such a case, and why?

ANSWER. There are two methods open. It must either arrange with the bondholders to change the maturity of the bonds to 1935 and increase its sinking fund deposits during the next fifteen years sufficiently to enable it to retire the bonds at their earlier maturity, when it may again borrow sufficient funds to replace the pavement, or

It must put aside sufficient in each year for the next fifteen years to provide 50 per cent of the moneys needed to replace the pavement.

Under the first proposal, the citizens in the ensuing fifteen years will be paying 40 per cent more per annum than they would have done had the money been borrowed for 25 years in the first place, the ratepayers of the 10 years past having escaped that much too easily.

Under the second proposal, which is made on the assumption that the cost of construction in 1935 will be on the same plane as in 1910, the ratepayers of the years 1910 to 1935 will have paid for the pavement as originally laid down, for that period, and provided the sinking fund on the whole issue for 25 years, and in addition 50 per cent of the assumed cost of replacement.

What do the ratepayers from 1935 to 1960 get under the two plans?

Under the first, they get exactly what they pay for.

Under the second, they are given $50,000 in cash for the purposes of replacement, in return for which they are re-

quired to pay $2317.12 each year to complete the retirement of the original $100,000 issue.

The following sets out what the ratepayers for the next 15 years would have to pay under each proposal:

Under Plan 1:

The Sinking Fund at Dec. 31, 1920, would be .....$	6,008.14
In order to build this up to $100,000 at Dec. 31, 1935, would require	93,991.86
	$100,000.00
The annual sinking fund deposits on the original issue was	477.67
The additional sinking fund deposit will require to be	3,878.13
Total annual deposit required from 1920 to 1935..$	4,355.[illegible]

Under Plan 2.

The sinking fund deposit under the original issue was ....$	477.67
The sinking fund deposit required to produce $50,000 at Dec. 31, 1935, is	2,317.12
Total annual deposit required ....$	2,794.79

The council should decide which of the two proposals is the more acceptable. The writer leans to the former and a clean sheet for posterity.

PROBLEM 7.

A city during financial stress, arranged with the bondholders that it should suspend payments to the Sinking Fund for five years and that the life of all its bonds should be extended five years. During the suspension of the sinking fund, the carrying charges of the electric light and waterworks plants were taken to be the amount of interest. Three years elapsed before this fact was revealed by a new firm of auditors. What remedial accounting action is necessary, if any, and why?

ANSWER. The fact that no sinking fund deposits are required to be made during the five years in question, does not by any means say that no depreciation should be provided. The assets are wasting in exactly the same manner, and at exactly the same rate, as if no alteration had been made in the terms under which the bonds, from the proceeds of which they were created, had been made, whilst obsolescence due to improved machinery, etc., has to be provided against, just as if the city had not been through a period of financial stress.

It would appear as though the Council should act promptly in deciding to make provision for depreciation and obsolescence on fair lines during the ensuing two years, and also to create further depreciation equalling that which should have been provided during the three previous years. This latter should be charged spread over the ensuing five years, so as not to make the burden unduly heavy in any one year.

But it may be argued that the suspension of the sinking fund was obtained solely to obviate the need for making such provision.

This is no argument at all in connection with two public utilities that should be on a paying basis.

What has doubtless happened in past years is that the provision for depreciation, made by means of charges for overhead to the utilities, has been dissipated in the general

revenue. If this be the case, and the utilities mentioned were paying their own carrying charges up to the date of the re-adjustment, they will doubtless be making a profit at least equivalent to the annual sinking fund deposits, so that one of three courses is open to the council. Either it must reduce its charges to the consumers in order to obviate an unjustifiable profit; it can take the unjustifiable profit and again dissipate it in general expenditure; or it can do the right thing and set aside a fair reserve for depreciation and obsolescence.

The reserve thus created should be placed in trust where it cannot be tampered with, and reserved for the purpose for which it is created.

The accounting in this case is merely the issue of a cheque chargeable to utility carrying charges, and payable to the Trust.

PROBLEM 8.

A city, owing to non-collection of taxes in subdivisions, found its deposits to the Sinking Fund $500,000 in arrears. Special legislation was secured enabling the city to capitalize these arrears by the issue of 6% bonds spread over twenty years on an annuity plan. The bonds were disposed of to the trustees of the Fund to the amount of $200,000 at par, and $300,000 were sold on that market on a 6½% basis. How should these matters be treated.

a. in the books of the city

b. in the books of the Sinking Fund Trustees.

ANSWER. The purchase of the $200,000 at par presents no difficulty. In the books of the City the Liability to the Trustees is reduced by this amount and a debenture liability therefor is set up. In the books of the Trustees converse entries are required. The City debenture register will record the items of repayment, and the investment register of the trustees will perform them the same service.

The remaining $300,000 does, however, present some difficulty in that it fell short of the object for which the issue was authorized to the extent of the discount, amounting to $27,545.00.

The great question will be to finance this discount, and under the circumstances there is little doubt but that this will have to be done from current revenue, as otherwise the City will still owe the Sinking Fund $27,545, for which it is unthinkable that it should issue still more debentures. Prompt action is necessary, as this sum must carry interest.

The Sinking Fund will be paid $272,455 in cash, and its books will show the liability of the City to have been reduced by that sum. They must also take cognisance of the fact that the annual deposit from the City must be increased by $15,121.29 which is the amount required to produce $500,000 by means of an annual deposit accumulating at 5%.

The books of the City will be entered up conversely to

those of the Sinking Fund. If a cheque is drawn in favour of the Trustees for the amount of discount, it will be a charge to General Revenue.

The liability of the total issue will be set up as $500,000 and the Debenture Discount charged to Surplus account as an offset to the charge to current revenue, as in this particular case the city has no asset other than the payment of the proceeds of the Debentures to the Sinking Fund, which is not really an asset, but paying for a dead horse in the shape of a deferred charge to subsequent revenues.

PROBLEM 9.

A city borrowed $100,000 to bonus a new industry to that extent.

The bonds were on a 5% Sinking Fund plan both as to interest and rate of accumulation.

After 10 years the industry failed and under its agreement the City seized the plant, which it sold by auction for $50,000 cash.

What should be done with the money?

ANSWER:—

At the time of sale there would be in the sinking fund	38038.84
Add the proceeds of the sale	50000.00
	88038.84

The amount required at the end of the next ten years being $100,000, we should find the present value of this sum on a 5% compound accumulation. This is $61,391.33. Therefore the Sinking Fund should forthwith be paid the difference between the amount to the credit of this By-law, $38,038.84 and $61,391.33, or $23,352.49, leaving $26,647.51 ($50,000.00—$23,352.49) yet to be disposed of.

It is a fundamental of Municipal Finance that moneys received from the sale of Capital Assets shall be earmarked for Capital Expenditure only. The statutes in most Provinces recognize this principle, and there is no doubt that such is the proper disposition of this sum.

It may be timely to mention here that where the rate of accumulation on Sinking Fund Deposits is the same as the interest rate on the bonds themselves, the annual cost of the bonds is exactly the same as for annuity bonds.

PROBLEM 10.

A City discovers that owing to mistakes by its auditing staff, depreciation of Capital Assets has been provided to the extent of the amount of the annual sinking fund deposits, ignoring the accumulations. How is the revenue of the City affected, and what remedial action is necessary.

ANSWER. The revenue of the City is not affected at all. It has made its deposits to the credit of the Sinking Fund presumably, and this is the only item affecting revenue.

Accumulations of the Sinking Fund do not affect the general revenue of the City at all. The only reflection of these accumulations to be found in the City Balance Sheet should be in the reduction of the Debenture Liability.

It is true, that according to accounting practice, the amount of depreciation written off capital asset should be on a parity with the amount of the Sinking Funds. Surplus earnings of the Sinking Fund do not affect the amount of depreciation.

If the accumulations of the Sinking Fund do not affect the Revenue account of the City, what do they affect? Primarily the Debenture liability, and the Depreciation Reserve.

Assuming the Sinking Fund to be in the hand of Trustees, what entries are annually necessary in the general books of the City to enable the City to write up its Depreciation so as to be in accord with the Sinking Fund Books.

Taking as an example at the end of 1919, the Sinking Fund Trustees report displayed the following standing:

Assets	240,000.00	
By-Law Requirements		220,000.00
Surplus earnings		20,000.00
	240,000.00	240,000.00

The 1920 deposit was $25,000.00 and the accumulation $8,800.00.

All that should appear in the books of the city is that the Depreciation Reserves amounted in total to $253,800 at the end of 1920, and that the Sinking Funds for various purposes totalled the same amount.

It is evident from the statement that the books of the City did not agree with those of the Sinking Fund, and that if for example the depreciation provided amounted to $200,000 at the end of 1919 the Sinking Fund in the City books must also have been wrongly displayed.

But we are asked what remedial action is necessary. If the Sinking Fund Reserve is correct, viz., $220,000 and the Depreciation Reserve incorrectly shown at $200,000 there has been some neglect or lack of bookkeeping methods.

In this case, all that is necessary is an increase of $20,000 in the Depreciation Reserve with a corresponding contra to Surplus.

If, however, both the Depreciation Reserve and the Sinking Fund Reserve are erroneously displayed in the books of the City, then both accounts should be increased to bring them into accord with the accumulated Sinking Fund.

Such an instance only exemplifies the need for the appointment of Sinking Fund Trustees, as then the City Books and those of the Trustees would not have been in agreement

PROBLEM 11

A City is carrying on Capital works to the amount of $2,000,000 which take 2 years to complete, and for which consolidated stock is offered for sale when the work is completed. During construction, Treasury bills were offered for sale for the purpose of financing the works until such time as the stock can be sold. The Bills were discounted at 94, and the discount charged to current revenue. Is this correct?

ANSWER. The first thing we gather from this question is that the bills were discounted. Therefore the amount of discount became interest on temporary borrowings until such time as the work was completed.

The question now resolves itself into arriving at a decision as to whether the cost of temporary financing during construction is a capital charge or not. If not, of course the procedure adopted in the question was correct.

It would seem that there are two condition under which temporary borrowings during construction are necessary. The first is under similar conditions to those outlined in the question, and the second in case the bond issue for the works is dated prior to construction, and sold as funds are needed, or as favourable selling conditions arise.

In the first case, as in the question, the Treasury Bill discounts appear to be an incidental to construction, and therefore might reasonably have been included in the issue of consolidated stock just as discount on the stock itself might be.

On the other hand, if the discounts on Treasury Bills were caused by the delayed sale of debentures the reverse might obtain, because the ByLaws under which the debentures were authorized, unless postdated to the date of their sale, would provide for the levying of interest and sinking fund during construction. If such were the case, the discounts would take the place of the interest coupons on the bonds to their extent, and are therefore a thoroughly justi-

fied charge to revenue. Of course in such an instance the interest coupons on the debentures would automatically cancel themselves.

There is a natural tendency on the part of Municipal Councils to lighten the tax levy during their years of office as much as possible, and instances of charges to capital on pretexts such as are exemplified in the previous paragraph are resorted to with that end in view. The effect of such action, as was pointed out by the special auditors in the case of the City of Regina some years ago, and according to their published report is to deflate the taxes for that year and to spread the amount of the deflation over the years covered by the bonds. In that specific case the auditors wrote:—

"The interest charged to *CAPITAL* was virtually equi-"valent to the interest incurred by the issue of Treasury "Bills. The Treasury Bills were issued as a substitute for "Debentures whose sale was delayed. As Debenture inter-"est, this charge was clearly due to be borne by revenue, "and it is equally clear that the Treasury Bill interest "should be debited to revenue in like manner. Instead of "taking this course, the City elected to make a charge to "Capital, the effect of which was to relieve the taxpayers of "1913 and 1914, and by inflating Capital expenditure, it "laid the burden of carrying this on the tax payers of the "next twenty or thirty years."

The firm of Auditors in question, reversed the standing of Capital and Revenue, according to their report, and their action is heartily concurred in by the writer.

This particular point, however, has no bearing on the question of capitalizing the cost of temporary finance during construction. That this is in reality a fair charge is assumed by the statutes of the provinces of Ontario, Manitoba and Saskatchewan at least, in that special provision for capitalization of such expense is made in those dealing with Local Improvements. A further support for this policy, it is believed, may be found in the Greater Winnipeg Water Scheme Statements of Capital, and many leading accounting authorities take the same view.

PROBLEM 12.

As a matter of sound financial policy, a city for several years based its tax levies upon that part of the city which was "inside property" and ignored the subdivisions as a revenue producing entity. As for example, if the city required $1,000,000, and the total assessment was 50 millions, of which the subdivisions were assessed for 10 millions, it levied 25 mills on the dollar instead of 20 mills on the total assessment. At the end of 1919 it found the books showed a liability to the schools of $250,000 in excess of their demands. Discuss the situation in view of the fact that, were the city in a position to finance application for tax sale titles the subdivisions would become city property.

The crux of this question is in the last sentence. Theoretically, the school taxes on the subdivisions are paid by reason of the fact that when the city purchased the same at tax sale, it became responsible to the schools for the amount collected in respect of school taxes. On the other hand, although not directly required to do so, cities never treat school taxes as an indirect liability, paying over taxes as collected, but treat the schools' demands as an integral part of the general levy. In the present case, however, the increased levy should, whether it does in fact or not, automatically increase the liability of the city to the schools.

Let us suppose that of the $1,000,000 actually required, $300,000 is for the schools. By reason of the fact that $1,250,000 was levied, $375,000 is the equity of the schools in the tax levy, hence the excess of $250,000 accumulated during the years this method of levying has been in vogue.

Title of these subdivisions cannot be obtained until the Registrar of Land Titles is assured by means of a certificate to be given by the Secretary of the School Boards, that the schools have been paid their equity in the lands affected.

On the other hand, the School Boards, being fully seized of the situation, may decide that the city is not morally, if legally, indebted to them in the sum of $250,000, as their demands have annually been met in full.

Legislation exists empowering cities to issue debentures enabling them to raise funds to pay school taxes in such cases, but from the fact that the schools do not need the moneys, this course should not be taken till all other courses have failed.

It is an understood fact that taxes levied on behalf of schools are held in trust by the city, and that they can be diverted in no case.

Truly, therefore, an interesting and complicated situation exists, which is applicable to several western communities, although not to the degree displayed in the question.

There would seem to be two courses open which are practicable.

The first is for the school boards to set forth the situation as it exists, in the form of a resolution to the City Council, giving a quit claim to the subdivision taxes in question. After this has been done, an agreement between the school boards and the council could be drawn up and presented to the Legislature for ratification by a special bill.

The second is for the council during the subsequent year, to reduce the amount of the demand of the schools by $250,000, but to include in its own tax levy a sum of $250,000 for the purpose of paying the school taxes on its subdivisional tax sale holdings. By this means, assuming the city to be able to finance the costs of application for title, the relationship of the city with the schools will be brought back to normal—with the acquisition of the land to the city it can either be sold or put back to where it always should have been, viz., acreage, in which case it will be able to pay reasonable school taxes, or as city property it will be exempt from taxation.

Of the two solutions, the latter is preferable, as it creates no legislative precedent.

The issue of debentures to finance bad debts—which is a correct definition of subdivisions in wildcatted districts—should never have been allowed. Cities should make reason-

able provision for bad debts everywhere, and if the city had annually placed the amount overlevied to the credit of a reserve for uncollected taxes, the present situation would not have existed.