

turns, time sheets or otherwise as may be used, must balance with the accounts credited as above to labor account, and debited to the accounts represented by the various orders.

In the detail working under these orders, through a number of employees, means of obtaining material and making returns under and to these orders become necessary, and where a large number of employees are engaged, these necessarily require the adoption of other forms or blanks, as, for instance, the requirement of material necessitates for the execution of any order that an application be made that the employee needing that material to the store room or storekeeper, where such material is kept on hand, or through whom it will be purchased if need be. In the system described, this becomes what is known as a requisition, blank No. 6, and in filling out such requisition the employee requiring the material quotes thereon the No. of the order on which he intends using it. Similarly in making returns of labor or time, the time ticket or labor return blank specifies the order No. authorizing such labor. Blanks or forms authorizing the return to store-room of any surplus material that may have been taken out on an order, also recite thereon the order No. to which it is to be credited or upon which it is returned. In all these returns or reports, besides quoting the No. of the order, the accounting of such order is also recited, the object being to prevent the error of charging a wrong account through a mistake or transposition of the order Nos.

Revenue accounts may also and in the system herein referred to are sub-divided or classified into various accounts of service from which the revenue is obtained, as, for instance, alternating current incandescent lighting, alternating current motor service, direct current motor service, are lighting, etc., and this sub-division may be made as minute as the management desires.

Dealing with a large number of customers, it is important that means be adopted whereby none shall escape from the grasp of the bookkeeper or collector. Therefore no customer should be connected with the service lines except under an order, as above described, authorizing such connection and supply of the service called for. Upon completion of such order, it is returned to the bookkeeper, with notation thereon that connection has been made and supply of service begun. Meanwhile, that is, as soon as the order to make connection has been issued, the contract signed by the customer upon which the order has been issued, is transmitted to the bookkeeper, who immediately opens in his ledger an account with such customer. On the return of the completed order, the bookkeeper notes in his ledger at the customer's account, the date of starting, which is also marked upon the contract. The customer's contract is not filed or put away or considered as being in operation, until such notation has been made.

As an additional precaution, when the account is opened in the ledger, a card similar to Form No. 7 is prepared by the bookkeeper, giving the customer's name, address, ledger folio and number of contract (and all contracts are numbered serially), character of service, and generally the main details of the contract and service. This card is filed according to ledger folio, and accumulates the record upon which the debit side of the customer's account in the ledger is created.

In cases where meters require to be read, these cards constitute the guide to the meter readers as to what meters are to be read. In sending out accounts to customers for service, every card must be accounted for by an invoice, and the fact of such invoice rendered noted thereon. In other words, the card is used to make out the invoice against the customer and the invoice is used to enter the account in the ledger, and every account in the ledger must be represented by an invoice.

The use of the method of making the entries in the day book and ledger from the invoice instead of making the invoice from the record book, is to hasten the transmission of accounts to customers, in order that they may not have any cause of complaint for delay in the opportunity to pay their accounts.

In practice, the invoices are made out during the month as far as possible, leaving only the final entry to be made when the amount of the invoice has been determined, so that it becomes possible to transmit a large number of accounts within practically one day after the meter readings have been taken.

The cards, in fact, constitute the history of the relations of the customer with the company, and at a glance show the variations in the use of service, for, as will be perceived, they are made to cover the year's transactions. They apply equally well for "flat" rate customers as for meter customers, though they are for recording meter readings. In the case of meter customers, they indicate the variations of use and afford a guide to the bookkeeper to inquire into the accuracy of the meter reading reported, any falling off or unusual increase in the use of the service as indicated by a reading immediately attracts the attention of the bookkeeper or billing clerk, thereby causing him to institute an immediate inquiry into its accuracy. In the case of "flat" customers, it declares at once the proper amount of the account to be rendered, by the record of the account previously rendered.

The debts to customers are credited to the several sub-divisions of the revenue accounts, that is, the customer may be using several kinds of service, the amounts for which are debited to his account, but credited each to the revenue account to its individual class of service. This results in determining the revenue obtained during any period from each kind of service, the total of all, of course, representing the entire revenue obtained and offsetting the expenditures made therefor.

Companies having to deal with a large number of customers and various classes of service, and varying discounts, resulting from special or large consumption, will necessarily require for the convenience of the cashier, a secondary or subsidiary cash book in which can be noted the special discounts or allowances made,

as well as the cash received for the various classes of revenue. A form of such cash book is indicated in blank No. 8. This cash book, or rather entry book, for the receipt of cash and discounts, applies only to discounts stipulated in the contract. Other allowances, rebates or credits are made only by authority of order issued specially therefor in each case.

Assuming this system of accounting to have been properly and carefully carried out to the end of the fiscal year, we would now have before us the total revenue from the business in its various classes. On the other hand, we would have the total cost of operation and maintenance, general expense and the total expenditure on capital account for the year; taking the total revenue derived and deduct from that the total cost of operation and maintenance, will give the gross profit. From this gross profit is to be deducted the general expense. The general expense account should include only such items as are purely general. By that I mean expense which cannot be charged to any specific working account, and is purely general in its relation to the business, such as interest, office expenses, directors fees, salaries of officials, legal expenses, travelling expenses, for instance expenses incurred in attending Electrical Association Conventions.

Deducting the general expenses from the gross profit will give the net profits of the business for the year, exclusive however, of depreciation. This question of depreciation is usually determined by the management. It always has been a much discussed question, and authorities find it very difficult to agree on a uniform method of application, the changing value of apparatus being so widely different.

However, one of the definitions of depreciations, given by Mr. E. Hartley Turner as "The re-payment of capital out of the total gross revenue earned during a given period of such proportion of the original capital outlay as has been absorbed or consumed in earning such gross revenue" is very good, could the amount so absorbed be readily determined. A definite plan, however, is to apply to property in which a residue of value under any circumstances must remain, a graduated percentage upon its changing value as representing depreciation. The amount of this depreciation, however, will be governed to a great extent by the amount of the expenditure on maintenance account.

In the presentation of this paper, I have endeavoured to follow out the question of Central Station Accounting from a business standpoint solely. With this in view, it has been confined almost entirely to the question of the method of ascertaining costs of generation and distribution, and recording from whence revenue has been derived and the methods of assuring the obtaining or all the revenue derivable. I have assumed that the important features are the knowledge of costs and the sources from which the revenue can be most profitably obtained.

The question of purchase of material and the recording of these purchases have not been touched upon, this method being practically similar to all lines of business; neither has reference been made to the obtaining or keeping of records pertaining more particularly to the Engineering Department, for the reason that this subject has been exhaustively considered in a paper entitled "Some Central Station Economies," submitted by Mr. P. G. Gossler at the annual convention held in Toronto in 1897.

Whilst, no doubt, the system herein described may appear elaborate and extensive in detail, and perhaps seem to entail expenditure for labor beyond the reach or desire of managers of small stations, I see no reason why the principle involved may not be used in any station at a slight expense. For while perhaps not requiring to employ all the sub-divisions indicated upon the blanks or forms shown, yet many of them can be utilized and put into practice with such modifications as the local conditions demand without imposing upon the manager or employees any labor or expense beyond that which can be afforded, and if I have succeeded in conveying ideas and information that may serve towards the adoption of a general system of Accounting for Central Station practice as suggested by the authorities referred to in the beginning of my paper, I will feel myself amply compensated.

PROPOSED POWER DEVELOPMENT.

The annual meeting of the shareholders of the Canadian Electric Light Co. was held in the city of Quebec on June 27th. The report presented by the directors stated that the \$200,000 of capital required in virtue of the prospectus had been subscribed, that the Chaudiere Falls water power would be acquired immediately, and that the directors were in negotiation with the Council of the town of Levis for furnishing light and power. It further stated that the services of Mr. Raoul Girouard, of Cumberland, Maine, had been secured as manager, and that Mr. A. R. Henry, M.E., of Quebec, would probably be appointed electrical engineer. The directors have two plans under consideration for the development of the water power of the Chaudiere Falls, one made by Mr. J. M. McCarthy, C.E., of Montreal, and the other by Messrs. T. Pringle & Son, of Montreal. According to their figures a minimum of 5000 horse power is obtainable. Arrangements are said to have been made with the Chaudiere Valley Railway Co. to construct and operate electric railways in the counties of Levis, Bellechance, Dorchester and Lotbiniere, obtaining power from the Canadian Electric Light Co. Directors were elected at the meeting as follows: President, John Breakey; Vice-President, Hon. L. P. Pelletier; H. M. Price, Gaspard Lemoyne, James King, R. Audette, R. Wilson-Smith, H. S. Holt and H. T. Machin.

Difficulties having arisen in connection with the carrying out of the contract for the Ragged Rapids transmission scheme at Orillia, Ont., it is probable that the work will again be opened for tender.