on to ascertain that the meter starts readily. For this purpose meter cases should have a window through which the movements of armature or shaft can be seen. No openings should be left between the cover and the back of the meters where insects may go in. They seem to find comfortable quarters there, and spiders weave their webs around the moving parts, retarding and sometimes stopping the meter. This is more likely to happen where houses are vacated during the summer holidays. The writer has used a stick of pine wood, about four inches long, one-quarter inch wide, and one-eighth inch thick, between the cover and back casting of Schallenberger meters, at the top, with good success. It has been suggested to squirt soft putty with a syringe, so as to practically seal the cover to the back, but this is seldom necessary. It is a commendable thing, however, as it excludes dust as well as insects. The connecting wires should be pulled through the binding posts until no bare copper is accessible from outside the meter case. The cover over the binding posts should be sealed with a lead seal bearing the mark of the meter department. It should be the duty of employees installing meters to see that there are no bare places or cut-outs on the mains between the meter and the service switch and main cut out, and to see that the latter is supplied with copper-tipped fuses of the right size properly put in.

Meters should be read monthly, if practicable, as "short accounts make good friends," but the large amount of clerical work involved in this practice often makes it preferable to have only quarterly readings. However, this makes very heavy bills in winter, which is objectionable. A good plan is to divide the six summer months, May to October, inclusively, in two periods of three months each, and the six winter months in three periods of two months each. The shorter winter periods will make the difference in the bills less pronounced and facilitate the collection of accounts. This compromise is confidently recommended as one that works well and gives satisfaction to consumers. The dates of the readings should appear on the bills, as they will show the number of days covered by the amount and frequently explain apparent overcharges. Reading meters correctly is not as easy as it looks. Men should be trained in the work and not changed unnecessarily. An unreliable meter reader is dear at any price. Errors in reading are mostly due to the fact that each dial is read by itself. Experience teaches that when a pointer is near a number, it is necessary to consult the next lower dial to determine whether the first pointer is short of or past the number. That is because the pointers are sometimes blunt, improperly set, or have a little side play. A plan which has been very successful in preventing errors, is to furnish the reader with books printed with facsimiles of the dials of a meter. The reader does not read in the ordinary sense, he merely copies in his book the position of each pointer, which is represented by a pencil stroke. The reading is done in the office.

A great saving of time may be made by using numbers to designate customers. Thus the meter reader would enter a reading taken at "A. G. Richardson, 319 Waverley street west," as "958. Richardson." The number is the page of Mr. Richardson's account in the ledger, and the addition of the surname makes identification of the reading more certain. The clerk entering the readings in the meter ledger should make each day a list of all readings which appear quite wrong from his knowledge of customers and their previous record in the ledger. This list should then be sent to the meter department with instructions to re-read the meters. Many errors will be corrected in this way before the bills are sent out, and meters that stop will be detected. Consumers sometimes complain that their bills are too high, and some have been known to express the opinion that the meters ran too fast, but the writer once encountered a consumer who said his meter was too slow; that was in Ottawa. When complaints are made, it is a good practice to get an extract from the complainant's account showing the total net cost of the light for a year. This will often be a pleasant surprise to him, as he has likely figured it out in his mind by taking his highest bill and multiplying it by the number of readings in the year, forgetting the summer bills. The period complained of should be compared with the corresponding period of the preceding year, if possible, and the preceding period should be investigated to see if meter was not under-read. In any case, offer to re-read the meter. If the first reading is confirmed and the bill really seems wrong, it is better to change and test the meter. When a customer makes general statements as to the small quantity of light he has used, you should get him down to details. Figure out with him the probable use of each lamp or group of lamps separately. Hold him down to facts. When you come to add it up he will be surprised, and the meter will generally be found to be not such a liar after all.

The practice of metering the output of the central station, which is becoming quite popular, is a move in the right direction. The data obtained through the use of station meters is not otherwise available. It is sure to lead to economies in the station, and will be of material assistance in making and re-adjusting rates.

In inaugurating meter rates, it has been customary to copy the practice of the gas companies, sanctioned by long usage, of a single rate, with or without discounts off large bills. The conditions under which electric light generating plants operate are, however, very different from those of a gas plant. The gas plant is fully utilized, and works at the point of highest efficiency for as many hours as may be desired, storing the product that is not immediately required. For an electric light plant the contrary is the case. Forced to run our plant from sixteen to twenty hours per day at a small percentage of its total capacity, which must be such as to meet the large demand which will be made upon it for a few hours every day, we find that the great bulk of our expenses are incurred, not in running the plant, but in getting ready to run. The charges assumed for each consumer connected to our lines, in order to be ready to supply him, are fixed, whether the lights are to be used ten minutes or ten hours per day. The cost of supplying current after the first ten minutes is only from one-third to one-sixth of the fixed charges previously incurred. It is easy to understand, therefore, that a consumer using his lights only a short time every day, which is likely to be during the period of highest load at the central station, may not be a source of profit and may sometimes be a source of loss.

Does it not seem reasonable that this consumer should pay such a meter rate that his yearly payments shall cover the fixed expenses made on his account according to the number of units held in reserve for him and subject to his call? This rate being applied to all consumers for, say, the first hour of the use of their lamps, would fully protect the supply company from loss on account of fixed expenses, so that any additional current would only need to be charged with the variable expenses of running, and could be sold at such a low rate as would encourage the further use of current during the hours of light loads at the central station. Such a method of charging for current naturally tends to lower the peak of the station load curve somewhat, but especially to build up, if not the lowest, at least the intermediate portions of it, and thereby to increase the earning-power of the plant.

The above considerations have led managers of electrical supply enterprises to devise various methods of charging for current in harmony with the principle of differential treatment of consumers, according to their value to the supply company as a source of profit. Arthur Wright, electrical engineer of the municipality of Brighton, England, who has devised a system of meter charges known as the "Maximum Demand System," wishing to show the injustice and loss involved in the old single rate plan, cites two cases, his worst and his best customers. The first employed for his maximum requirements 177 h.p. of the generating and distributing plant, capitalized at $36,966, costing, for interest, sinking fund and depreciation only, $2,582. He used in one year the equivalent of all his lights, burning 61 hours, and paid, on the single rate plan, $823.

The other employed 1.9 h.p. of the plant, capitalized at $394, and costing $27.70 annually. He used in one year the equivalent of all his lights, burning 2,004 hours, and paid $288.

Thus the larger consumer, who paid $823, and who would under the single rate plan be entitled to the larger discount, was actually a source of loss to the supplier to the extent of $1,759; while the small consumer who paid $288 netted the supplier a profit of $260 on the capital charges, and the variable expenses were also much less in his case, as he received only 3,807 h.p. hours, while the large consumer used 10,797 h.p.