been made from time to time by the city and by the company at various checking stations.

7. Records of Individual Car Trips which have been made and which ought to be made to ascertain when the passengers board the car, how far they travel and when they alight, and the ratio between the maximum number of passengers using the car on a given one-way trip and the maximum number on the car at any one time.

8. A Study of Transfers showing the total number and the character and size of the transfer load at the transfer points.

9. Record of Franchise Requirements and agreements between underlying companies which affect the number and location of the cars on the various lines.

10. Copies of Working Agreements with operating men as to hours of work, tripper or swing back runs, etc.

11. Full List of Car Equipment available, ordered and contemplated, with data as to possible changes which will allow for double-ended operation.

Principles of Routing.

Before much progress can be made in re-routing the cars, an agreement will be desirable covering the fundamental principles involved, some of which may be outlined tentatively as follows:

1. Measure of service on any route should take into account the ratio between the total number of passengers in the car for the entire one way trip and the maximum number on the car at any one time. This "loading factor" is different for different routes, and if the continuous records for individual car loading is to be an indication of the relative demands for seats, this factor should be determined for each route and used intelligently.

2. To determine whether any part of the system should be on a through line or on a transfer route, the demand for seats during the rush hour on that line should be sufficient to call for say six large cars per hour; otherwise it will probably be found that better service may be supplied by a small car operating more frequently in a shuttle service.

There may be routes or lines upon which shuttle service might be provided to the best advantage at all times except during rush hours, when "through" cars can be provided.

4. Transfers are not a hardship if the passengers get something in return to compensate them for the inconvenience of transfer—for instance more frequent service in large comfortable cross seat cars for at least part of the ride.

5. The small single truck cars should be operated on the hills, and on cross town transfer lines, but should be kept out of the terminal district and off the main thoroughfares.

6. In the down town district, the long haul routes should make use of the short loops and the short haul routes should use the long loops, as the long haul passengers will walk further to get a seat than the short haul passengers.

7. Through routing can be established gradually, by first connecting the short haul routes on different sides of the city in such a way as to form through routes, and as these first routes prove successful, more through routes may be added.

8. Transfers should be given in an effort to cut out useless car miles and by concentrating traffic on through routes secure the efficiency that comes with the most efficient density.

9. If it can be agreed that the service to be supplied is measured by the income, then the one city, one fare principle and a very liberal transfer policy can be adopted, and there will be no question as to whether or not the patrons of the system will get back in service their share of the fare.

The working out of the whole problem of routing, therefore, starts with determining definitely how much of the income is available for service, then how many car miles this appropriation will supply, and finally what disposition of this service will best supply the demands for seats.

This program presupposes that the records of the present routing and service will be available, that the results of a complete system of checking future operations will be made public and that there will be continuous and effective co-operation between the company and the city in considering and carrying out the proposed changes and eventual improvements.

A STEAM HEATING SYSTEM UNDER MODULATED CONTROL.

A seven-day test conducted last winter on a Warren Webster Modulation Heating System in an office and warehouse building in Montreal, demonstrates how successfully heat can be supplied when, where and in the amounts wanted by a steam heating system in which the steam admission to each radiator is regulated and the discharge of water and air is under proper automatic control. The installation on which

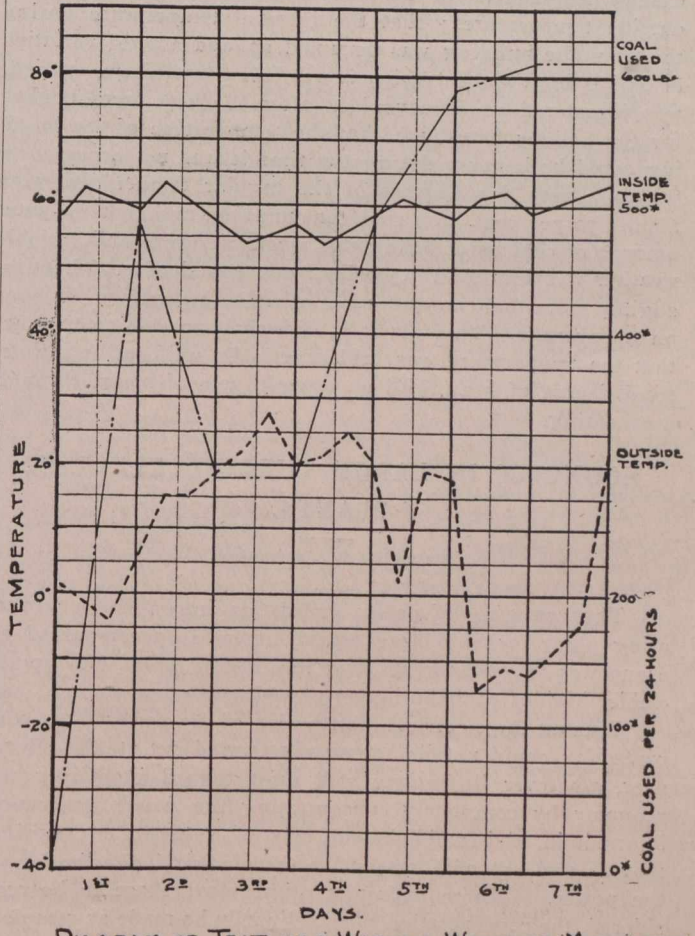

DIAGRAM OF TEST OF A WARREN WEBSTER MODULATION HEATING SYSTEM IN AN OFFICE AND WAREHOUSE BLD., IN MONTREAL. DESIGNED BY DARLING BROS. LTD. AND INSTALLED UNDER THEIR SUPERVISION.

the test was conducted was designed by and installed under the supervision of Darling Bros., Limited, of Montreal, sole manufacturers in Canada of the Warren Webster apparatus, and was a standard two-pipe Webster Modulation System.

The test ran from a Thursday to the following Wednesday, the offices being closed all day Saturday. The building in question has a cubical content of 120,000 feet, is exposed