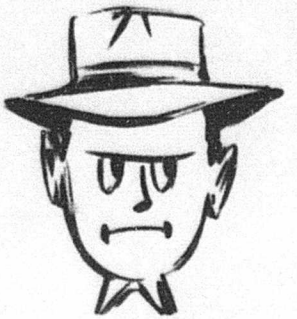


Schedules

A message to employees of the
B.C. Electric Transportation Division
from I. W. NEIL
General Manager of Transportation

K.P. 3M. 3-50.

Why are Schedules Necessary?

Recent meetings between operators and members of the Administrative Staff have indicated that many employees are interested in knowing more about schedules for the Vancouver City Lines. In a property the size of ours, the preparation of schedules is a complicated, but interesting job. It is a most important task, too. The work of the Schedule De-

partment has a great bearing on how well the public is served, how well the operators can do their job, and whether the operation makes or loses money.

There are many reasons for taking time and trouble to build good schedules, but I will mention just a few of the most important ones.

1. In a large city such as Vancouver, with a great many vehicles in service and few downtown streets on which we can operate, scheduled service is the difference between an orderly flow of traffic and chaos.

2. We're in business to sell rides. We schedule vehicles so as to have the rides available at the time the customers want them.

3. Schedules help prevent unnecessary mileage and thus contribute toward good wages and working conditions.

4. Schedules are necessary so that each operator will have as nearly as possible an equal share of the work, and will know what his share is and when and where his day's work will start and finish.

How Schedules are developed

The work of the Schedule Department divides itself into two main parts, the first being the preparation of the schedules and the second being the cutting of the runs shown on the schedules into suitable work shifts.

A good schedule will provide accommodation on the vehicle when and where customers require it. Thus the construction of a good schedule starts with finding out where and when people are likely to travel. This is no easy job. People travel to work, on business, to shop, to school, to visit friends, and to amusement centers. Their travel habits are different on various days. On Mondays, more women may clean house rather than shop. On Wednesdays many stores are closed. Many business premises are closed on Saturdays, and others close at

noon. Sundays and holidays of course have a pattern of their own. Weather has a big influence on day-by-day travel. Department store sales and special events put an added load on transit facilities. There is a seasonal variance in travel, with crowds visiting the beaches and parks in the summer.

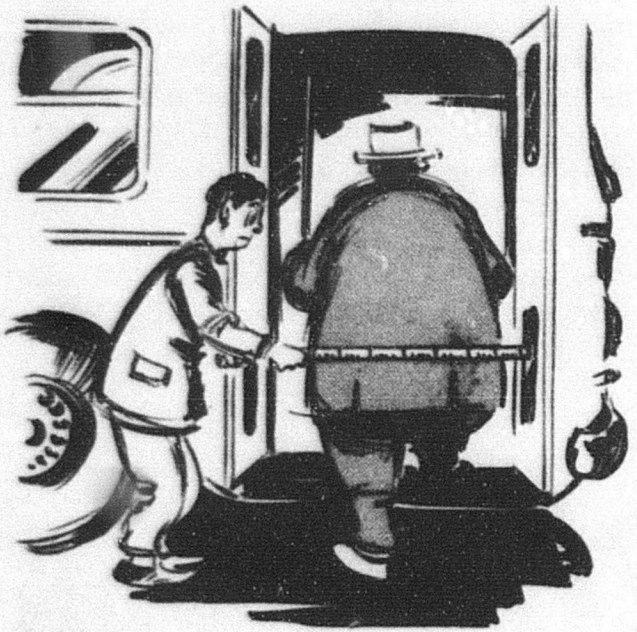
As you know, the Vancouver metropolitan area is one of the fastest-growing districts in Canada. New residential areas are being developed. Consequently travel habits are always fluctuating. Also, we are in the middle of a large-scale conversion program. As new routes are developed, and others equipped with new vehicles to improve the service, these changes bring alterations in established riding habits.

All these things must be taken into consideration by the Schedule Department. Theirs is a never-ending job of securing up-to-the-minute information and adjusting schedules accordingly.

Where do we get the information? For example, we get information from Traffic supervisors. Comments from the Operators are passed along to the Schedule Department by the Traffic Supervisors. Letters from the public are given careful consideration. From time to time we make passenger on-and-off surveys. We analyse fare collections and transfer habits. We make surveys of residential, industrial and business areas.

The most important sources of information, though, are the frequent reports of our Traffic Checkers. These men count loads on vehicles either by riding the vehicles or by observing from selected points along the route. They turn in a mass of detailed information. This is collected, tabulated and analysed before each sign-up period. Then the Schedule Department has a reasonably good idea of the loads they are likely to be called upon to handle at various points along each route, in both directions of travel, on the various days of the week and on the various hours during each day. This completes the first step in schedule building.

Service Design Standards



The next step is what we call "designing the service". That's a fifty cent way of saying that we have to figure out how many vehicles must pass each major point on each route during each 15 or 30 minute period of every day in order to accommodate the passengers without undue crowding, or without wasting vehicles which might be used elsewhere.

As a starting point we have set up "loading standards" which are quite generous in comparison with other systems on the continent. Briefly, we try to provide an average of one seat per passenger in each 30 minutes in the off-peak periods, and we try to allow an average of three square feet of floor space per standing passenger in each 15 minutes in the rush periods in the maximum direction of travel and at the maximum load point.

Of course, loads on an individual bus do not always equal these standards. Despite what we can do traffic tends to bunch, and people here seem to prefer to jam on the first vehicle that comes along rather than wait a few minutes for a more comfortable ride. When headways get uneven, the vehicle bucking the gap gets more than its share of the load, and the one following often gets less than its share. Then again there is quite a variation in loads between days of the week. We'll discuss some of these reasons why it is hard to maintain even loads a little later on.

Well, knowing our loading standards, and knowing the number of seats and the standing room area on the type of vehicle we propose to use on a route, and having information about the average length of

ride, average length of standing ride, the relation between loads and speed of operation, the effect of transfer points on loads, the relative proportion of passengers getting off along the route to new passengers getting on, we can figure out how many vehicles have to pass a given point in a given period. This has to be done for each route, of course. It's no job for a man who has trouble figuring out his income tax.

Running Times

The next step, now that we know how many vehicles are required at various points to carry the people, is to schedule each vehicle into a series of trips in such a way that the correct number of vehicles will pass each point specified in the design. We can then figure out how many actual runs and vehicles are required. To do this, we must know the running times for each route.

When this data is all in hand, the running times between timing points are set for each period of the day. The times selected will be such that at least two-thirds of the vehicles can complete the trips between timing points within the allowance.

Running times are not determined by guesswork or by a slide-rule. In reality they are determined by actual checks. A number of traffic checkers synchronize their watches and locate themselves at the timing points along the route. They note the arrival and leave times of every vehicle on that line which passes the point, and thus get the actual times required by a great variety of operators for all periods of the day.

This is repeated for various days in the week.

In addition to this, experienced men ride a number of the vehicles at the same times of the day, and on the same days of the week. They note the time required to travel between points, the load carried, the number of stops made, the duration of the stops. Location of traffic lights, school and hospital zones, and whether the operation is normal, fast or slow. Trips which are delayed due to unusual circumstances like bridge openings, accidents, etc., are not counted. This method gives not only a large volume of time checks but also a picture of the loads carried, stops made, delays encountered and the general problems of the operators.

These individual running times between timing points are then added up, and an allowance made for recovery. The total then becomes the standard for that route at that particular time and in that direction of travel. The recovery time is made sufficient so that under normal conditions operators of the remaining one-third of the vehicles can complete their trip, have a breather and still start the return trip on time.

Recovery time usually works out between 8 and 10%. On the shorter runs a larger figure is used. Recovery on a round trip is not allowed to go below 3 minutes.

The Schedule Department requests your co-operation in locating individual running times that may be too tight or too generous. Pass this along through your Supervisors so that the Schedule Department can take a look at them.

It is not always possible to read the recovery times from the schedules. The times given at each terminal are leave times and the times outbound on the last timing point to the terminal may not be the same as the time inbound from the terminal to the timing point in question. On some routes such as Davie-Fraser and Broadway East-Robson, recovery time is built and given at both ends of the route. On other lines such as Macdonald and Granville the City Authorities do not wish the coach to stop in the downtown area longer than necessary to load and unload passengers, change signs etc., and therefore all the recovery is given at the outer terminal. Whenever possible the recovery time is increased above the amount shown both before and after rush periods to give the operator a better chance to start each trip on time and to reduce the necessity of short turning the cars to get them back in place. Occasionally when the headways are close, the recovery times in the middle of the rush periods may be reduced to get the vehicles back into heavy loading areas in time to make another useful trip.

Construction of the Schedules

At this stage in the preparation of the schedules, representatives from the Schedule Department, the Operating Superintendents, Chief Traffic Supervisor, and the representatives from the Union meet to discuss new schedules and changes to existing ones. Running times, headways, anticipated loads, types of vehicles to be used, all get a thorough airing and decisions are made for the new sheets.

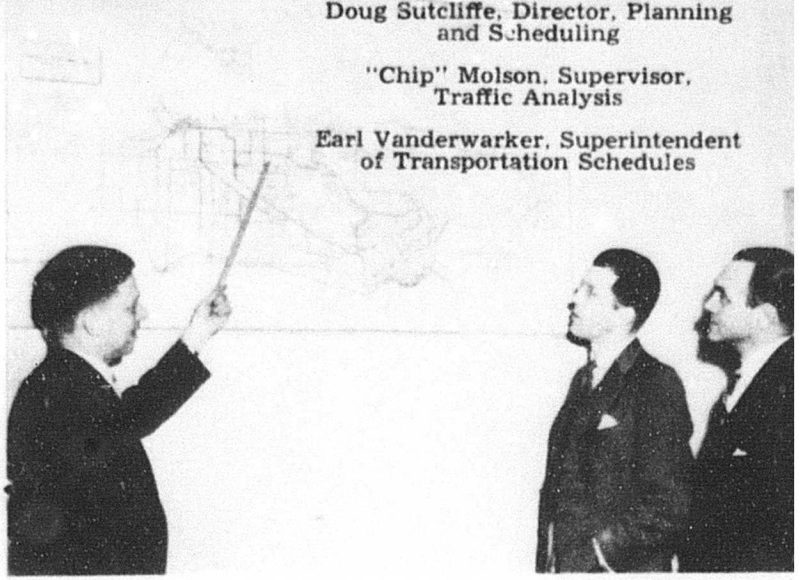
Knowing the running time and the number of vehicles which must pass each major point in a given time interval, it is then possible to construct the schedule by building the various runs. This sounds simple,

Continued on Page 20

Doug Sutcliffe, Director, Planning and Scheduling

"Chip" Molson, Supervisor, Traffic Analysis

Earl Vanderwarker, Superintendent of Transportation Schedules

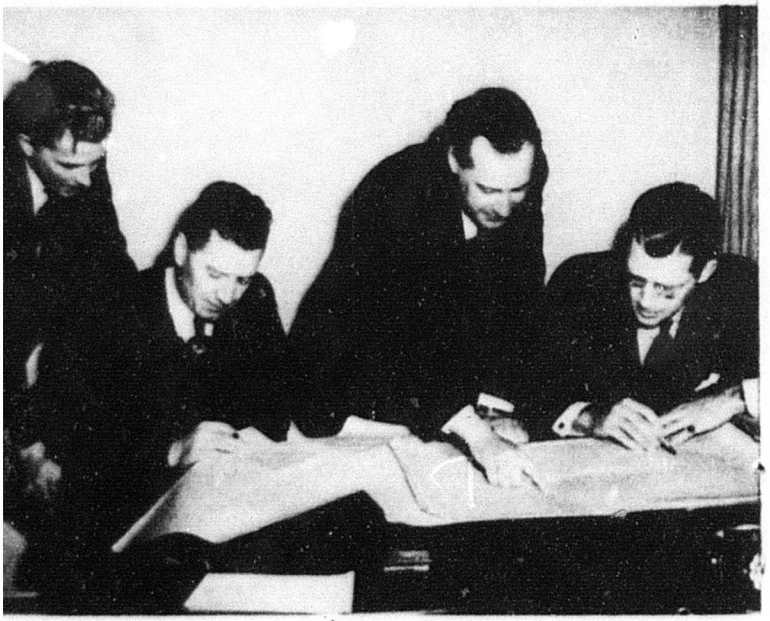


Left to Right: Chip Molson—Supervisor, Traffic Analysis; Tom Sawyer—Divisional Superintendent—Prior St.; Bill Deyell—Union Representative; Horrie Matches—Chief Transit Supervisor; Earl Vanderwarker—Superintendent of Transportation Schedules; John Hayward—Union Representative; John Intihar—General Superintendent of Vancouver and Intercity Lines; Art McKenzie- Divisional Superintendent, Oakridge; Doug Sutcliffe—Director, Planning and Scheduling Dept.

Laurie Pallot
Senior Schedule Clerk

Earl Vanderwarker
Superintendent of
Transportation Schedules.

Fay Bradley, Lesia Rurak, Statistical Clerks;
Bill Hannula, Traffic Analysis Clerk



Left to Right: Bill Hannula, Traffic Analysis Clerk; Bill Deyell, Union Representative; John Hayward, Union Representative; Chip Molson, Supervisor, Traffic Analysis.

"Nan" Runcie
Mileage Clerk

TRAFFIC CHECKERS

Left to Right: Laurie Taylor, Jim McNeal, Walter Venans, Ken Gibson, Alex Gibb, Al Merkley, Griff Bosdet—Supervisor, Ray Robinson, Jack Craig, John McDonald, Bill Boeur, Roy Moore, Roy Woodbridge, Harry Baldwin, Tommy Ellis, George Perkins, Ed Oliphant.

Al Merkley
Traffic Checker

Griff Bosdet
Supervisor of Checkers

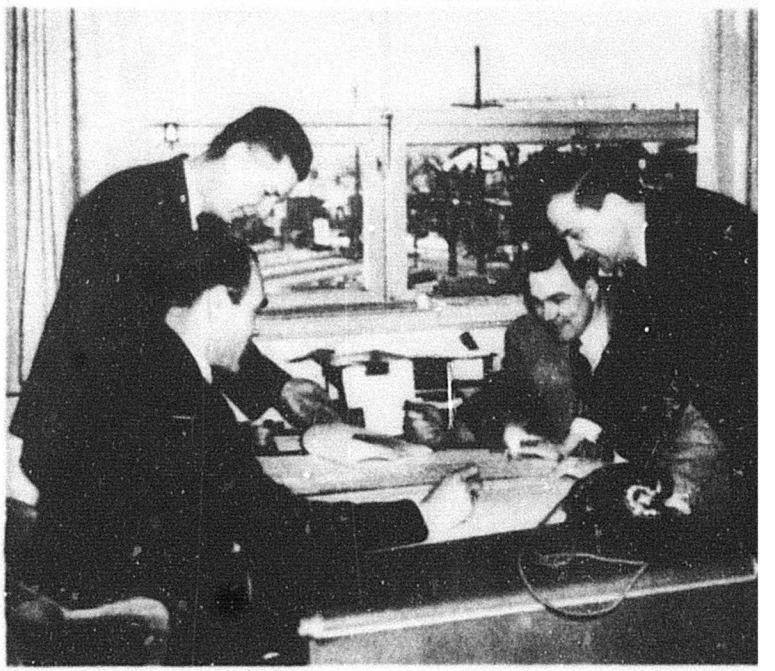
Harry Baldwin, Traffic Checker

Harold Morgan
Cliff MacKay

Schedule Clerks

Shirley Moulds, Harry Kulak, Schedule Clerks.

Tom Lloyd
Schedule Clerk



Left to Right: Earl Vanderwarker, Supervisor of Transportation Schedules; Bill Deyell, Union Representative; Laurie Pallot, Senior Schedule Clerk; John Hayward, Union Representative.

Cutting the Runs

It is the responsibility of the Schedule Department to split up these runs into work shifts so as to develop the best possible distribution of duties for the platform employees. As there are over 250 street car runs and over 500 bus and trolley coach runs at the present time on a typical weekday, exclusive of blocks and extra-board work, it is apparent that this is no small task. During the building of the Schedules and the cutting of the runs, the representatives of the Union work with the Schedule Department as much as they wish.

The way the Schedule Department goes about the job is to cut a basic number of straight shifts from the long runs to provide a core of straight work. Then the short runs are pieced together with portions of the longer runs to give split shifts close to eight hours and within reasonable spread-over time. Finally, the remaining tag ends are juggled into further split shifts, into specials, or assigned to the extra board.

The shifts are now in a workable arrangement, but require refinement. They are therefore reviewed and re-worked to improve the shifts and

to convert as many specials and extra board work as possible into 8 hour shifts.

The result is the familiar "Running Sheet" which shows for each work shift the run number and line, the place taken up, the time on and off, the place relieved. The total time if between 7 hours, 50 minutes and 8 hours is made up to 8 hours.

This is repeated for each of the Weekday, Wednesday, Saturday, Sunday, and Holiday Sheets. Blocks are worked out, the sheets are examined by a committee representing the Union, and the sheets are ready for sign-up.

The Schedule Department also prepares the Time Sheets from which the platform men are paid, Days Off Sheet, which cross-references the Block Sheets to the Running Sheets; Output Lists to show the men and vehicles required for duty; Fare Box Check-In Sheet; Seniority Lists; Vacation Lists; and Early & Late Schedule Summary to assist information clerks in answering enquiries and preparing time tables.

You have probably noticed several references to the Union representatives being in on discussions on schedule building. This is a fairly recent development. Two Union men appointed by the Union, sit in with the Schedule Department and the operating personnel whenever new schedules are being considered

or major changes being made to existing schedules at a regular signed-up period. These men raise any problems or observations that they have and in many cases their ideas are incorporated and result in improvements to the schedules. They are present when the schedules are being designed and built, and participate in the cutting of runs to work shifts. All the information and data for the Schedule Department is open to them. Where differences of opinion develop between the Union representatives and the Operator or Schedule Department, and agreement is not reached during the numerous discussions, these differences are noted and the results checked jointly on the streets after the schedule is put into effect. If adjustments are then found necessary, they are made. These Union representatives are also on the Union Sheet Examining Committee and thus are in a good position to know exactly what is in the sheets.

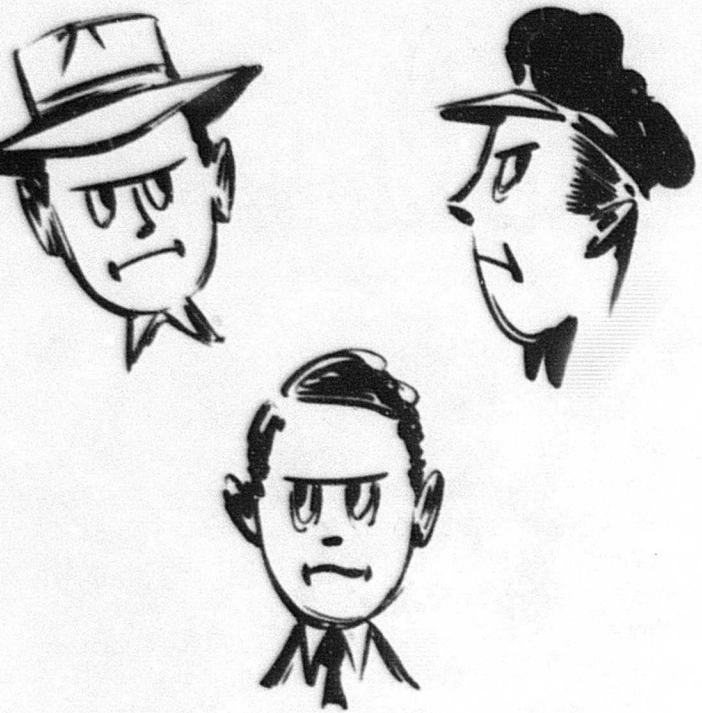
Tests of a Schedule

You will have seen from the foregoing the tremendous amount of detailed work that is necessary to build up and sign up a new set of schedules. In fact, there is so much sheer mechanical work to be done that it is difficult, when sign-ups are reasonably frequent, to make all the changes that the traffic checks indicate should be attempted.

After a new set of schedules has been put into effect, it takes a few days for the service to shake down, and many adjustments may have to be made, due to fact that some time has elapsed since the data on which the schedule was built has been taken and analysed.

There is no satisfactory way of measuring the efficiency of schedules. A schedule may be good or bad depending upon your viewpoint. Your management wants a schedule that is fair and reasonable to the public and to the operators, and has the lowest cost consistent with high patronage.

It is obvious that it would be poor business to cut the schedule to the



point where the public are encouraged to use competitive forms of transportation. It is also obvious that a transit company cannot provide unnecessary service and stay in business. For example, if the trolley coaches on the Davie-Fraser route were required to go around just one block more than required by passenger demand, the extra out-of-pocket expense of operating this additional mileage would run to about $750 a month. In other words, it would take the fares, not including transfers of an extra 250 passengers a day to pay for this extra one block of travel. You can see why the Schedule Department must attempt to serve each route in the most efficient and economical manner

Even when the Schedule Department does build a good schedule, allowing fair running times, setting reasonable loading standards and providing sufficient vehicles at the right headways, yet the service can be completely fouled up through circumstances beyond their control. Traffic delays in town, fires, parades, fog, snow, accidents, double-parking of cars, detours caused by road construction, bridge openings, all result in disruptions to the service. Keeping a transit service rolling smoothly demands the co-operation of everyone on the job. More running time is usually requested when delays are encountered, but this is not necessarily the answer. The operator is expected to provide a safe ride and to be considerate and courteous to passengers. Yet people want to get where they are going in reasonable time. If running times are too loose people complain about the service, and don't use the transit

vehicles any more than they have to. If they are too tight, operators cannot maintain proper headways nor make proper meets, nor give that extra service. The co-operation of everyone is required to find the happy balance.

There are many ways for an operator who is not conscientious about his job to make things difficult for his fellow operators. There are not many of these men, but it only takes one to foul up a line. Some of the main headaches include: passing up passengers to get on time where there is no vehicle following closely; pulling away from transfer points without accepting passengers from a meeting vehicle; running ahead of time to avoid doing a full share of work. Operators who commit these faults wittingly are not only hurting the service and therefore making their jobs less secure, they are giving all operators an ill-deserved reputation for carelessness and discourtesy, and they are placing an added burden on the men who take a pride in their work and do a consistently good job.

Our Objective

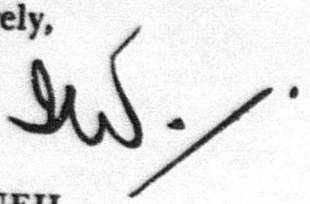
Our objective is to provide a safe, comfortable, convenient, regular and efficient service that will compete favorably with the private car and taxi and attract customers to our vehicles. The public pays the shot, and we all want the public to be served. We want to design running times and service standards that are fair and reasonable to the public, to the operators, and to the company. We are constantly reviewing our Schedules and methods through regular meetings with operators and supervisory staff, through discussions with officials of the other Transit Companies, and by employing consultants who are recognized authorities in such matters.

The men in our Schedule Department are human and can and do make mistakes. They have to be exercising delicate judgment all the time, and some of the decisions they make may need revising under

operating conditions. The Schedule Department welcomes constructive criticism at all times. Any comments you may have on our schedule building are welcome. Keep passing them along through your Supervisors so we can take a look at them.

Let's help each other do the best job we can.

Sincerely,



I. W. NEIL,
General Manager of Transportation.