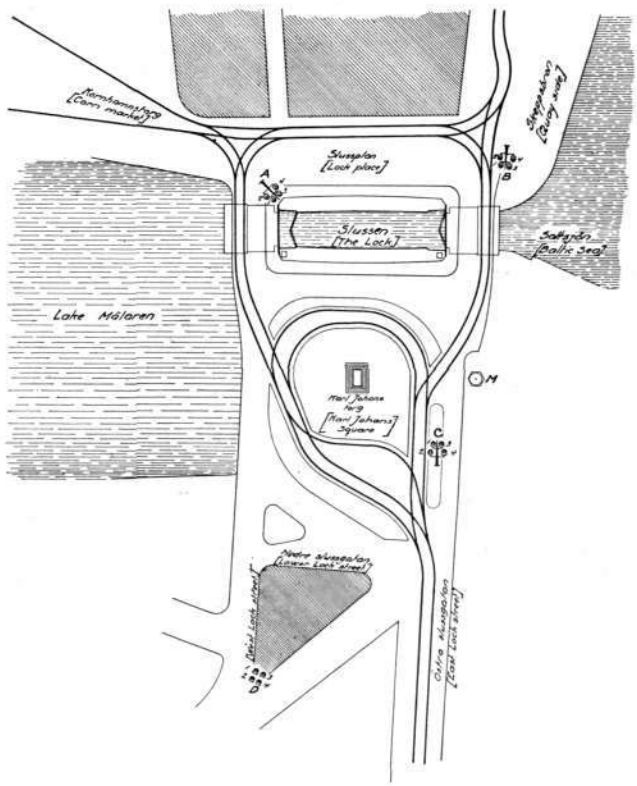
Traffic Regulating Signals at the Stockholm Lock.

In 1922, when through traffic between the North and South tramway systems of Stockholm over the lock bridges was established, it became necessary to regulate traffic passing over the bridges, these being occasionally closed to street traffic and opened to sea traffic through the lock. On such occasions the traffic, which is normally handled by both bridges, must be led over only the one, and the tramcars and other vehicles are informed as to which bridge may be passed, signals having been arranged on both sides of the lock for this purpose. They were originally intended for the use of the tramcars, but are equally useful for other vehicles as well.



F 151 Fig. 1. Plan Showing Lock and Vicinity.

Signals have been placed at four different points, as shown on the accompanying plan, on which they are denoted by the letters *A*, *B*, *C* and *D*. Signal *B* serves the traffic from the Quay side, *A* the traffic from the Corn market, and *C* the traffic from East Lock street, these signals being mounted on tramway poles. The signal *D*, which is mounted on the corner building between West Lock street and Lower Lock street, is not for the use of the tramcars, but, unlike the other signals, only for other vehicular traffic going in the direction of the lock.

Each signal is composed of four lanterns placed in two rows, as shown in fig. 2. The two upper lanterns of each group give intermittent green flash-signals and the two lower ones similar red signals. Two of the lanterns are always simultaneously flashing, the other two being dark. The two right hand lanterns denote the bridge which is to the right when approaching the lock from any direction, while the two lanterns to the left denote the left bridge. A green signal means *clear*, and a red means *stop*.

For example, if we advance towards the lock from the Quay side and observe two green flash-signals from the signal group *B* — the only one visible from this point — it means that both of the bridges are open to traffic. A green signal to the left and a red signal to the right but slightly lower indicate that the bridge nearest the Baltic sea may be passed, but that the bridge on the Lake Mälaren side is closed to street traffic, and so forth.

Thus we see that the entire signal system is extremly simple and effective.

The lanterns are furnished with lenses to make the signals sharper, and are also provided with funnel-shaped screens so as to make the signals visible by daylight.

The signals are controlled from a signal tower *M*, placed close to the pavement on East Lock street, east of Carl Johan's square. The upper part of this tower, as may be seen in fig. 2, is lantern-shaped with windows on all sides, so as to give the watchman posted in the tower a clear view over the entire vicinity of the lock. Ringing signals and telephone communication have been installed between the signal tower and the position occupied by the lock operator, enabling the tower watchman and the lock operator to exchange signals before the opening of a lock bridge for sea traffic. The raising of one of these bridges many not take place without the permission of the tower watchman, who, by altering the flash-signal for the bridge to be raised from green to red, first orders the tramcars to pass over the other bridge. When a lock bridge — after having been raised for the passage of boats — is again lowered, for the passage of street traffic, the lock operator informs the tower-man of the fact so that he may forthwith change the stop signals to clear.

R 152 Fig. 2. Traffic Signal Mounted on Tramway Pole.

This altering of the respective signals for the one or the other lock bridge is accomplished by one single manipulation, it being only necessary for the watchman to throw a switch from one position to the other, this switch having one position for »stop» and one for »clear». Two such switches, one for the signals of each bridge, are mounted on an instrument board within the tower. In addition to various devices required for the signalling system, this board is also provided with control lamps for the light signals, by means of which it is possible for the watchman to control these latter.

The flash-signal lights are electric. The flashes are produced by means of a light-flashing device actuated by a 220 volt direct current, as used for the signal lamps. The lighting current for all of the signal lights is led over the contacts of a relay connected to the light-flashing device. The relay contacts are alternately closed and opened by means of the light-flashing device, causing the signal lights to be alternately lit and extinguished about sixty times per minute, the light and dark periods being of equal duration. All of the lamps which glow simultaneously — two in each signal group — flash in unison. Two light-flashing devices with associated relays are installed in the signal tower, one of them being for emergency use.

In addition to the telephone communication between the tower watchman and the lock operator, telephone instruments have been mounted on the tramway poles at *A*, *B* and *C*, whereby the tramway employees, if necessary, can communicate with the watchman.

The equipment for this signal plant has been furnished by Allmänna Telefonaktiebolaget L. M. Ericsson through Signalbolaget, the erection of the same having been done by A.-B. Stockholms Spårvägar (The Stockholm Tramways Company.)

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