

R.M.S. *Caronia* (34,183 tons) leaving Southampton Water on her maiden voyage.

Telephone Equipment in the *R.M.S. Caronia*

New Vessel in the Cunard-White Star Fleet equipped with G.E.C. Telephone System



Entrance to the Verandah Cafe.

THE 34,000-ton Cunard-White Star liner, *R.M.S. Caronia*, launched by Princess Elizabeth in October 1947, is the largest passenger vessel to be built in the world since the war. Luxuriously fitted, she will spend most of her time on cruises, but will be on the Atlantic run during the tourist season.

The policy of the Cunard-White Star Company has always been to provide the best facilities for the comfort and convenience of passengers. In

furtherance of this policy, the *Caronia* has been fitted with a comprehensive telephone system, to afford a first-class service for the passengers and, at the same time, to ensure effective administrative channels for the ship's personnel. The system installed in the *Caronia* differs from those on the *S.S. Queen Mary* and *Queen Elizabeth** in that two exchanges are employed. An automatic exchange affords communication between the ship's personnel, and a separate manual exchange provides passenger-to-staff intercommunication.

* G.E.C. Telecommunications Vol. 1, No. 3, 1946.

Although a single exchange serving both passengers and staff might at first appear to be the more economical solution to the intercommunication problem, two separate systems were installed for the following reasons. As passengers are changing voyage by voyage, a telephone directory—an essential item for the efficient operation of an automatic exchange—becomes impractical. Further, passengers should have, as soon as they embark, a readily accessible source of information, namely the telephone operator, whereby they can become immediately aware of all the facilities provided for their comfort. The telephone operator is able to give full aid to the passengers by answering all their enquiries, and connecting them to the service in the ship appropriate to their needs.

The conditions governing a communication system for the staff differ from those governing a system for the passengers. Here the choice is in favour of an automatic system, since the staff know

exactly to whom they wish to speak, and will become familiar with the numbers to be dialled. In addition, besides giving a rapid service, a separate automatic system relieves the operators of administrative calls, thus enabling them to give their undivided attention to the handling of passengers' requests.

By affording access from the manual exchange to the automatic exchange, and vice-versa, the two systems are combined into an integral whole, capable of providing any facility required by either the passengers or the staff.

Manual Exchange

The manual exchange provides 600 extension lines to passenger cabins, lounges, dining rooms and recreational centres, and enables passengers to make service requests, to communicate with one another or with ship's personnel, and to make calls to the shore, by shore-line when in port or via radio-telephone when at sea.

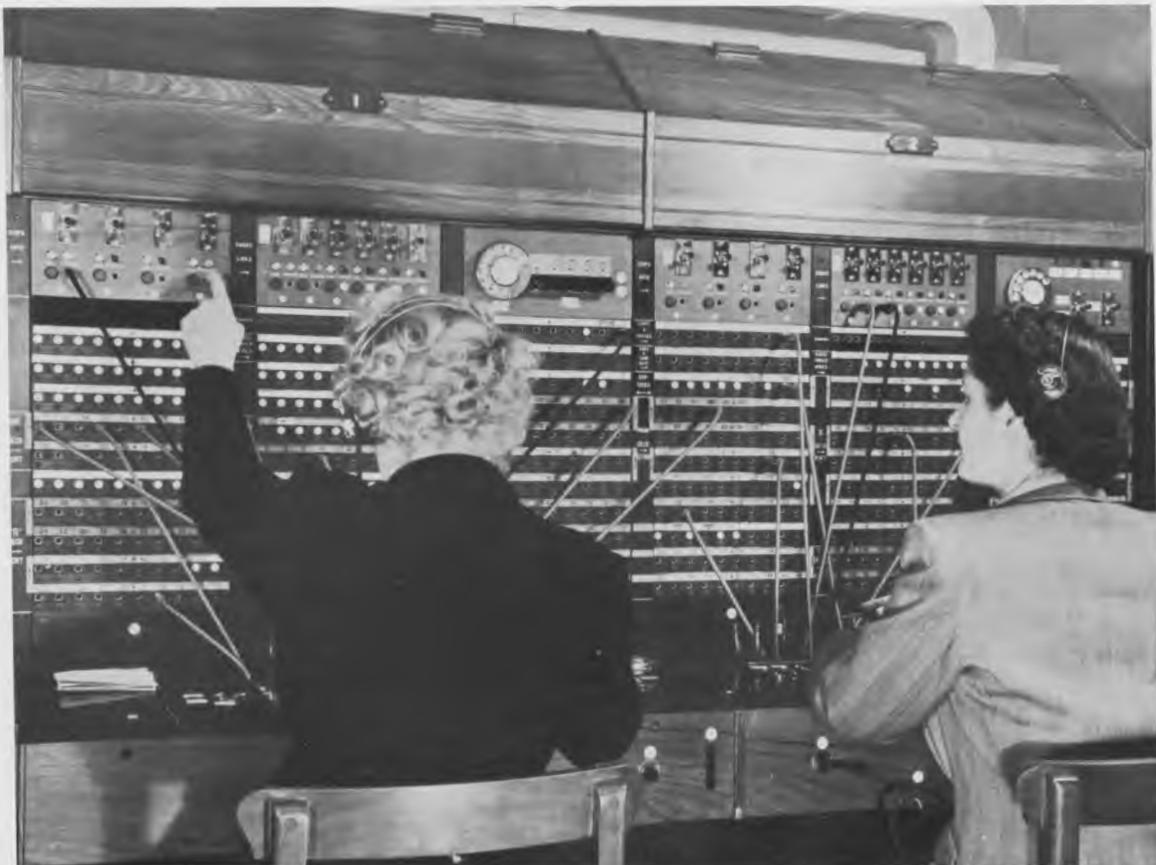


Fig. 1.—600-Line Central Battery Switchboard.



Fig. 2.—One of the State Rooms.

The switchboard, shown in Fig. 1, is constructed in two sections and has provision for three operating positions. Under normal conditions the switchboard is staffed by two operators, but when traffic becomes abnormally heavy, a coupling key is thrown to connect five cord-circuits from each section to form a third (central) position. Alternatively, if the traffic is very light, the board can be staffed by one operator only. Lines from the cabins, each terminating on a jack with its associated calling lamp, are grouped on the switchboard face panels according to the position of the cabin in the ship. For example, panel 2 accommodates the group of extension lines associated with the cabins on the starboard side of the restaurant deck and the starboard side of the sun deck. Each group is given a distinctive colour to facilitate identification by the operator. At the end of each group is fitted the line jack of the appropriate pantry, coloured to associate it with its particular group. Where a group covers more than one row of jacks, small arrows show the operator the

line of progression from a calling lamp to the appropriate pantry line-jack. When a pantry is called from the exchange on a request for service, not only does a buzzer in the pantry telephone sound but a lamp glows in the corridor so that a steward in the corridor receives visual indication of the call. By answering the call, he takes the passenger's requirements direct.

At the top of the left-hand panel on section 1 of the switchboard (Fig. 1) is mounted the apparatus associated with four bothway lines to the automatic exchange. This apparatus is duplicated on the corresponding panel in section 2. To make a call to an extension on the automatic exchange, the operator inserts a CALL plug into a free bothway line-jack, operates the bothway-line DIAL key and dials the required auto-extension. When the called party answers, the call can be extended as required. A signalling lamp is associated with each bothway line to prevent seizure of a line already engaged by



Fig. 3.—Hairdressing Salon.

an operator on the other position. Calls incoming from the automatic exchange are signalled to the switchboard operator by the lighting of a CALL lamp.

Apparatus similar to that terminating the bothway lines to the automatic exchange is mounted at the top of the centre panels on sections 1 and 2 to terminate the shore-lines. When a request for a call to a shore subscriber is made, the operator inserts the CALL plug of one of the cord-circuits into a disengaged shore-line jack and calls the required subscriber. If the shore exchange is of the C.B. manual type, the insertion of the plug automatically calls the distant switchboard, if, however, the exchange is of the magneto type, the shipboard operator operates the cord-circuit RING key to call the distant switchboard. Where the shore exchange is automatic, the ship-board operator, after seizing the shore-line, operates an associated DIAL key and dials the required number on a shore dial. The shore dials, one of which is provided on each section, are mounted at the top of the right-hand panels adjacent to the shore-line jacks (Fig. 1). The dials provided are of the plug-in type, readily interchangeable to suit shore

exchange conditions and directory number requirements.

Radio-Telephone Facilities.

Two radio-telephone cord-circuits, and two radio-telephone order-wire circuits are provided on each section of the switchboard to enable the operators to extend any telephone in the ship to a radio link for shore communication when the ship is at sea. To set up a radio-telephone connexion the operator inserts a regular cord-circuit CALL plug into one of the ORDER-WIRE jacks, and operates the cord-circuit RING key to call the radio room. The necessary instructions are then given over this order-wire. When the required radio connexion is established, the radio room recalls the switchboard operator over the order-wire and informs her which radio cord-circuit to take into use. The operator then inserts the indicated radio cord-circuit plug into the calling subscriber's jack, thus making a direct connexion to the radio circuit.



Fig. 4.—One of the State Rooms.

The call may be cleared-down at its conclusion either on receipt of a supervisory signal from a lamp associated with the radio cord-circuit, or on verbal instructions from the radio room over the order-wire.

Miscellaneous equipment provided on the switchboard includes fuse-alarm lamps, a night-alarm switch and standby hand generators for use if the normal ringing-current supply fails. Mounted on metal frames at the rear of the switchboard are the relays and associated equipment of the cord-circuits, the automatic lines, shore-lines and other miscellaneous circuits. The frames are hinged and can be opened, gatewise, to disclose the cords and to give access to relay wiring. The cords are spring-controlled, to ensure that the movement of the ship does not cause them to foul each other. Materials and finishes used for the apparatus and wiring have been chosen to withstand wide extremes of temperature and humidity.

To suit the general furnishing and decorative motif of the cabins and lounges the telephones are of ivory-coloured plastic with gold-plated external metal parts (Fig. 5). On certain telephones, the silk-covered connecting cords are terminated on small plugs to enable the instruments to be connected to alternative sockets in the cabins, at the passengers' convenience.



Fig. 5.—Plug and socket connexion for alternative positions of Gecophone to suit passenger convenience.



Fig. 6.—Corner of First-Class Smoke Room.

Automatic Exchange.

The automatic exchange, serving selected members of the staff, has a capacity of 90 lines. All local connexions are completed automatically when the caller dials the required number. Access to the manual switchboard is gained by dialling O.

The equipment is installed in a compartment adjacent to the manual exchange, and, as seen in Fig 7, is accommodated in two cabinets. These cabinets are constructed of polished hardwood and are fitted with a hinged, glass-panelled door at the front and with a lift-out door at the rear to afford easy access to the apparatus and wiring. Apparatus layout in both units is similar. At the front of each unit are final selectors, linefinders, allotter and line-circuit relays. The final selectors, which are of the jack-in type, can be easily removed for maintenance purposes.

Five connecting links (each consisting of a line-finder and a final selector) are provided, with facilities for the addition of another link if required later.



Fig. 7.—90-Line Automatic Exchange for administrative service.

Initially, therefore, the maximum traffic capacity is ten simultaneous calls, with an ultimate figure, when both units are fully equipped, of twelve simultaneous calls.

System operation conforms with the standard practice for small units of this description—a line-finder stepping to find the calling line, and an associated final selector stepping, in response to the dialled digits, to the wanted line. The allotter assigns links in sequence to spread traffic evenly over all links.

When a caller dials O for connexion to the manual switchboard, the final selector taken into use steps to the corresponding bank level. The selector wipers then hunt automatically over the contacts in that level to find the first free outlet to the switchboard. This outlet, with its corresponding line circuit, is seized and the call extended into a bothway tie-line circuit at the switchboard. On a call incoming from the switchboard, the junction line-circuit takes into use a linefinder and final selector in a manner similar to that on an ordinary calling-line circuit.

Dial tone, busy tone, ringing tone and ringing current are provided by vibrating and interrupting

relays. Alarms are given in the event of a blown fuse, or when a caller lifts his handset but fails to dial.

Power Supplies.

Both manual and automatic exchanges are arranged for 24-volt working, and the supply for both units is derived from duplicate 24-volt batteries. Each battery has a capacity of 98 ampere-hours, based on a 10-hour rate of discharge, and the batteries are charged alternately, via a regulator unit, from the ship's 220-volt D.C. supply mains.

A small power board is situated in the room containing the automatic equipment. Also accommodated on the power board is a ringing machine which provides the ringing current required by the manual switchboard. This machine operates from the battery 24-volt supply, and gives a 24 c/s A.C. output of 5 watts at 40 volts.

Earth-shield wires for the ringing and tone distribution circuits, and suppressor units on the ringing machine and in the ringing and tone circuits of the automatic units, serve to prevent both interference between adjacent circuits and the radiation of energy at radio frequencies.

FACTS ABOUT THE R.M.S. CARONIA

Owners Cunard-White Star Co. Ltd.

Builders John Brown & Co. Ltd., Clydebank.

Launched October 1947 by H.R.H Princess Elizabeth.

Length overall 715 feet (215 metres, approx.) *Breadth moulded* 91 feet (28 metres, approx.)

Length between perpendiculars 665 feet (202 metres, approx.)

Draught 30 feet (9 metres, approx.) *Gross Tonnage* 34,183 tons.

Length of Promenade deck 495 feet (151 metres, approx.)

Number of decks 10.

Height of Tripod Mast above keel 1,222 feet (68 metres, approx.)

Height of funnel top above keel 149 feet (45 metres, approx.)

Number of passengers First Class—581, Cabin Class—351, Officers and Crew—587 ;

Total Complement—1,519.

Cargo Capacity 37,800 cubic feet. *Twin screw.* Each propeller weighs 22 tons