THE NEXT LOOK IN NAVAL COMMUNICATIONS

THE ŞTRAD

In 1957 a revolutionary step forward in communications automation will take place, when the first STRAD (Signal Transmitting Receiving and Distributing) machine is installed in Whitehall Wireless for trials. When finally working at full pressure this machine (size 900 square feet of floorspace, cost—tens of thousands of pounds) will do the work of over 100 human Communicators.

The STRAD can be likened to a vast electronic brain, with its own built in memory and intelligence. Its function is to receive messages from up to 50 In circuits, recognise their routeing and precedence, and retransmit them on the correct selection of up to 50 Out circuits, in their right order. The machine works on the standard teleprinter 5 unit code, and so both Out and In circuits are connected to either line or radio teleprinter systems.

The heart of the STRAD is its "memory", or storage system. This is a magnetic drum, on which is deposited every message received, in the form of minute charges corresponding to the pulses of the coded version of the message. By means of an electronic filing and reference device every message so deposited can be read off as required for retransmission.

The intelligence of the machine is provided by a galaxy of electronic relays, which are preset to recognise certain standard combinations of letters and figures as containing instructions for message routeing. This seemingly miraculous facility in fact corresponds in a more sophisticated way to the ability of a normal teleprinter to recognise standard combinations of the pulses of the 5 unit code as letters or function characters.

The two main types of instructions that the machine has to deal with are routeing and precedence. The former is contained in the Routeing Indicators, and the latter in double letter precedence prosigns. Besides these executive instructions, a number of other functional instructions are necessary in order to operate the machine. Examples of these are "Beginning of routeing" and "End of message", etc.

If STRAD does not recognise a message fed into it, or the instructions are either garbled or impossible to perform, it rejects the message. The rejected message is retransmitted on the reject circuit, and arrives at a teleprinter where it is dealt with by a human being.

Messages which the machine recognises, and can be dealt with according to their instructions, are stored in the memory, until their turn for retransmission comes up. They are placed in the queue on each Out circuit according to their precedence and time of receipt, and when due for transmission, the message is read off the magnetic drum and transmitted. When all transmissions necessary to clear the message have been made, it is then automatically wiped off the drum, and the space is available for another.

Distribution is effected by passing messages for internal delivery to the M.S.O. by teleprinter, using one of the Out circuits. This means that the M.S.O. can be remote from the Traffic Centre.

The procedure used with the STRAD is basically the same as for Tape Relay at present. Minor modifications are necessary in order to include the functional instructions mentioned above.

Some of these modifications have been foreshadowed in the Tape Relay procedure book to be introduced in the new year, the Commonwealth Naval Tape Relay Supplement to ACP 127. This may explain some otherwise puzzling alterations in this supplement.

A machine of this complexity will raise queries concerning its reliability, and the maintenance effort needed to keep it running. This has been kept constantly in mind, and it is hoped that by means of careful design a very high degree of reliability will be obtained.

The final plan is for STRADS to be fitted at all major communications centres where the volume of message handling justifies it. Smaller or larger models can be produced to suit the size of the job to be done, which depend chiefly on the number of lines terminated at the centre.

A final point which touches us all. Automatic machines like STRAD work fast and accurately. However, they rely on an accurate human input for their operation. We shall all have to become very accurate at taping, teleprinting and in message layout, if the advantages of communication automation are to be exploited.—W.T.T.P.