

Between London and Birmingham, 120 miles, a quadruple Baudot on an underground circuit has been duplexed with very satisfactory results. From 8 a.m. to 8 p.m. as many as 4,044 messages have been handled on it. The senders had a man to sign and time for them. The circuit averaged over 3,500 messages a day for three months. The following are some figures—Eighteen men were employed, or eight operators and one man in charge at each end:—

Time.	1st.		2nd.		3rd.		4th.		Total.		Total each Hour.
	Sender.	Receiver.	Sender.	Receiver.	Sender.	Receiver.	Sender.	Receiver.	Sent.	Received.	
10 to 11 a.m.	38	36	55	49	59	48	52	51	204	184	388
11 to 12 ..	69	68	79	84	73	79	76	80	297	311	608
12 to 1 p.m. . .	67	53	53	43	71	35	60	47	251	178	429

The work from 11 to 12 is remarkable, and shows the capabilities of the instrument and of the operators; but such high results are not usual (see figures below):—

	Sent.	Received.	4½ men engaged each end for forwarded and received gives an average of	
10 to 11 a.m. ...	223	253	50 sent	56 received.
11 to 12 ..	224	254	50	56
Another day:—				
10 to 11 a.m. ...	233	257	52	57
11 to 12 ..	217	254	48	56

At other hours of these days the average per hour was less than quoted: it ranged from 42 to 50. This is due to the work not being there to do. During the following days totals were as below.—

	Forwarded.	Received.	Total.
December 19	2,027	1,867	3,894
„ 20	1,926	2,051	3,977
„ 21	1,919	1,915	3,834
„ 22	1,940	1,955	3,895
„ 23 (Saturday)	1,801	1,507	3,308

On the double duplex circuit, London to Berlin, from 8 a.m. to 8 p.m. from 2,500 to 3,000 messages a day are handled.

It was generally stated that it takes about three months to learn to operate the Baudot keyboard, and longer to become really expert. Apparatus is to be obtained by which tape can be perforated and fed into a Baudot transmitter, which passes the tape at thirty words a minute. A person can perforate the tape at a much higher rate than that. The advantage here is that the instrument can be kept fed at the utmost capacity available from the time of beginning to use the instruments, instead of having to wait to train men to use the keyboard. The ordinary keyboard can also be fitted so that it is easy to use either one or the other. This device, however, is not much used, as in France men learn Baudot as our operators learn Morse, and as it is there the Baudot apparatus is most largely availed of the tape transmitter is unnecessary.

In Berlin there was a good deal of Baudot working employed: a circuit to Cologne, 340 miles, and one to Warsaw, 400 miles. They were handling fifty to sixty messages an hour each channel on a quadruple. They use their Baudot only on overhead lines. The circuit to Paris, 750 miles, has a repeater at Coblenz, about midway. 200 lb. copper wire is used. The current is about 20 milliamperes.

In Paris Baudot is worked in the daytime on all long lines where there is heavy traffic. At night the Hughes is made use of. There were sixty Baudot sets, some sextuple, most quadruple, in one room. Two lines were worked sextuple, Paris to Marseilles, 500 miles, with repeaters at Lyons. On one line they send only Paris to Marseilles, on the other they send Marseilles to Paris. The wires are mostly 200 lb. copper. Some parts are iron, and they are underground in Paris for about twelve miles. On another 200 lb. copper circuit to Marseilles they work a quadruple without repeaters. A fourth quadruple Baudot on the same class of wire runs to Marseilles, where there are repeaters which enable them to work into three-cable circuits to reach Algiers. The cable is six hundred miles long. They have worked eighteen hundred miles quite satisfactorily, but, of course, repeaters had to be introduced. The repeaters at Marseilles are the most delicate part of the system. It was stated they handle six thousand telegrams a day on these circuits, and the repeaters, although delicate, do not require adjustment sometimes during a week. One mechanic was said to be required for every three quadruple sets.

Some Baudot sets are weight-driven; others are driven by small motors. On the weight-driven sets the weights are all wound up automatically by small motors. This was so also in London and Berlin. When motors are used for driving the brushes the voltage must be constant to avoid variations of speed. The maximum line-voltage used is 130. 20 milliamperes of current are sent to line, but 10 milliamperes are sufficient. No special attention is paid to insulation. If there is too much leakage another wire is substituted.

Baudot was said to be much easier for the operator to work than the Hughes. The number of messages per channel for Hughes or Baudot was considered to be practically the same. Hughes, however, can only be worked single and duplex, so that the line-capacity is not greatly raised by its use.