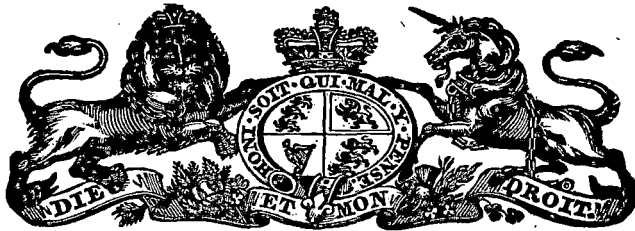


(No. 13.)



1877.

SESSION IV.

TASMANIA.

HOUSE OF ASSEMBLY.

**WHEATSTONE'S TELEGRAPHIC
INSTRUMENTS.**

Laid upon the Table by the Colonial Treasurer, and ordered by the House to be printed, October 2, 1877.



RE "WHEATSTONE" TELEGRAPH INSTRUMENTS.

It would be a retrograde step to introduce the "Wheatstone's" on our Lines, as, with but one or two exceptions, our Stations are now provided with the very latest and best "Morse" instruments, universally acknowledged to be far superior to all others.

Wheatstone's would cost nearly as much as "Morse" instruments, and could not be worked in conjunction with the Morse's, but only on Branch Lines, affording no record whatever of messages transmitted.

By connecting Electric Bells, Morse instruments can be used, quite as conveniently as Wheatstone's, on short Lines doing little business, where it is unnecessary to have Operators in constant attendance.

The Morse system is easily acquired by persons of average intelligence.

I have the honor of forwarding the following valuable opinions in support of what I have stated.

F. A. PACKER, *Superintendent of Telegraphs.*

2 October, 1877.

From Mr. CHARLES TODD, C.M.G., Superintendent of Telegraphs, South Australia.

In my opinion the Wheatstone instruments are best adapted for private Lines, or short Lines having but few Stations and little business; but in such cases they possess little advantage over the Morse instrument, the manipulation of which, if first class and rapid writing is not required, is easily acquired by persons of ordinary intelligence and having flexible fingers. The best description of Morse instruments seldom go wrong, and, with ordinary care, are inexpensive * * * I, from experience, recommend the Morse.

From Mr. T. R. JAMES, Manager Telegraph Department, Victoria.

WHEATSTONE'S instruments are only used on Government Lines at little Branch Stations in charge of Postmasters or Storekeepers, where very little business of any importance is transacted. Decidedly inferior to Morse system.

From W. J. CRACKNELL, Esq., Superintendent Telegraphs, Queensland.

Do not consider them fit for business purposes. Morse decidedly the better in all respects.

From Mr. WILLIAM WARREN, Manager of Tasmanian and Victorian Cable.

For ordinary Telegraph Lines the Morse is decidedly the best instrument, being the cheapest and less likely to get out of order. Wheatstone's A B C are suitable only for private Lines, such as Merchants communicating with Merchants' Offices, &c. They are also complicated in mechanism, and very liable to get out of order. I would recommend your Government to keep to the Morse.

From E. C. CRACKNELL, Esq., Superintendent of Telegraphs, New South Wales.

WHEATSTONE'S A B C instruments only fit for private Lines and short Branch Offices. Much slower than Morse.

WHEATSTONE'S A B C INSTRUMENT.

EXTRACT from "Handbook of the Telegraph," by R. BOND.

THE A B C instruments are the most readily understood of any of the telegraphic instruments ; indeed, it may be truthfully said—

"He who runs may read it."

This is one of the inventions patented by Professor (Sir Charles) Wheatstone, and is extensively used by private firms in the metropolis and other large towns, as an expeditious means of transmitting information, instructions, orders, &c. between main and branch establishments in the same town or district. A complete set of the apparatus consists of a Communicator or sending instrument, an Indicator or receiving instrument, and an alarum for each of the two places of business or stations which are connected by the telegraph wire. The face of the Communicator and Indicator is of circular shape, and has imprinted on it the whole of the letters of the alphabet, a cross, and a period, comma, colon, or a semicolon ; and, forming a ring, immediately underneath are duplicated a cross, the digits, and a cypher. The position of the dial or face of the Communicator is flat, so that the manipulator has to look down upon it, whilst that of the Indicator is perpendicular, and in that position, when viewed from a distance, bears a resemblance somewhat to that of a timepiece. In the centre of each instrument is a hand or pointer, which has a rotary motion. Surrounding the dial of the Communicator are 30 studs or keys, which should be respectively depressed by the finger as occasion requires to produce an instantaneous and simultaneous movement of the hand of each instrument to the letter, character, or figure which it represents. As an illustration, to telegraph the word "Bond"—

First, depress the stud in immediate contiguity to	B
Secondly	O
Thirdly	N
Fourthly	D

and the hand of the Communicator and Indicator will instantly rotate in the same order to those letters.

By this process practice will enable the manipulator to signal—

By the high-speed apparatus, 100 letters per minute.
„ medium-speed „ 50 „

The attention of the Receiving Clerk is obtained by means of the alarum, which is operated upon by turning the handle of the Communicator, and then depressing one of the studs, usually that opposite the sign +.

The letter A, which appears on the pedestal of the Indicator, signifies "Attention," and the letter T denotes "Telegraph."

The frame of the Communicator contains a permanent horse-shoe magnet with coils for producing the necessary magnetic currents. An exterior handle, on revolution by the hand, or other means, causes an axis carrying a soft iron armature in the instrument to revolve. This armature is so arranged upon the axis as to be in close proximity with the soft iron cores of the coils on the poles of the horse-shoe magnet, so that at every revolution of the axis with which the handle is connected, the soft iron armature passes over the poles of the magnet ; and at the moment of making and breaking contact, induces currents of electricity, moving in opposite directions through the wire of the coils, if the circuit be complete. These induced currents through the coils taking place each time contact is made and broken, during the revolution of the soft-iron armature with the poles of the magnet ; a succession of currents or waves of electricity is obtained by the continuous revolution of the handle attached to the axis carrying the armature.

The mechanism of the Communicator is so arranged that when any one of the thirty keys round the dial is pressed down by the finger, that key has the effect of cutting off the passage of the current along the line and through the instrument, and of making a short circuit with the earth so long as it remains depressed. When any other key is similarly depressed, a simple piece of mechanism causes the depression of this key to elevate the former key, open the electrical circuit, and allow the induced currents derived from the magnet to flow in succession through the instrument and along the wire to the distant station, until they are again interrupted and passed into the earth by the depressed key. This short circuit contact is made by means of a loose carrier arm attached to the axis which carries the pointer on the dial, and thrown in or out of gear by the depression or elevation of a key. Motion is communicated to this axis by a bevelled wheel working into a pinion fixed to the axis carrying the armatures, the motion being so adjusted that for every separate current induced in the coils, the hand shall move one space or letter on the dial. The keys, therefore, being depressed in succession will each liberate one current, or thirty distinct currents during an entire revolution of the hand round the dial, fifteen in one direction and fifteen in the opposite direction.

The face of the Indicator is spaced into thirty divisions like the Communicator, with its double circle of letters and figures, and its movable hand or index. A step by step motion is imparted to this hand by means of an electro-magnetic apparatus, which consists of two permanent magnetic bars or needles fixed to an axis, and lying parallel between two small electro-magnetic coils with soft iron cores. These electro-magnets are so arranged that when a current of electricity from the Communicator passes through the coils, their armatures exercise a mutual attraction and repulsion on the poles or extremities of the magnetic needles, the effect of which is to impart a backward and forward motion to the axis carrying the magnetic bars. Fixed to the end of this axis is a short vertical arm, carrying a small escapement wheel of fifteen teeth, the axis of which carries the pointer on the dial, and to which a step by step motion is imparted by the rotation of the escapement wheel working to and fro against fixed stops or pins.