To the inside of the outside case were attached maximum and minimum thermometers and an ordinary thermometer within the chronometer box proper. One dry cell was generally found sufficient for the clock circuit, and would retain its efficiency for two months. During the day time when not observing, the clock circuit was of course left open. The clock at each cable station was placed in one of the 'artificial line' cabinets, so that its temperature might be as uniform as possible. The fluctuation in temperature during the twenty-four hours was small, being confined within about two degrees Fahrenheit. At Vancouver the chronometer was kept in a small brick vault near the observatory, used for storing the powder for the signal gun, a quarter of a mile distant, which is fired daily at 9 p.m. Pacific standard time. Insulated copper wire connected the clock with the switchboard in the observatory, hence with the chronograph circuit; and by another set of wires with the sounder on the pier of the cable instruments, by means of which, as more fully explained elsewhere, the clock was made to record its beats by a special siphon on the cable fillet of paper.

The clock was wound daily at 4.30 p.m.

Bond No. 516 made two second breaks also; instead of omitting the 58th second break, however, a break for the 59th second was interpolated to identify the following one for the full minute.

Chronograph.—A Fauth (Saegmüller) barrel or cylinder chronograph was used. The cylinder was 6$\frac{3}{4}$ inches long and 4 inches in diameter. It was geared to two speeds, but the slower speed of one revolution per minute was the one always used. A Waterman fountain pen answered the purpose as recording style, but it requires attention. The perversity of some things at times seems inexplicable.

The pen, being actuated by the small armature of the magnet of the chronograph, and the electric circuit of the latter by the clock also by the observing key, records both the clock and star transit.

It was customary to use one chronograph sheet for each position of the instrument, so that for a complete set there would be four sheets for a night's observations, and an extra sheet when there was an exchange of clock signals over land lines. The chronograph sheets are infinitely more convenient for sealing a set of observations than the Morse fillet so common in the European observations. For subsequent reference too the sheet is vastly superior to the yards or fathoms of fillet.

The measurements on the chronograph sheets were made by means of a convergent-divergent glass scale, covering the two-second spaces, and dividing the same into tenths of a second, which by estimation were read to hundredths. Fig. 2 shows one of the chronographs used.

Levels.—Both the latitude and striding levels used were supplied with the transit by T. Cooke & Sons.

Their value was determined before and after the work by means of a level-trier, 114·40 inches between the pivots, and the Whitworth micrometer screw for raising and lowering one end of the trier read directly to one-thousandth of an inch. Determinations for value of one division of level were also made by placing the level longitudinally on the telescope tube of transit No. 2, then comparing the displacement of the bubble with the corresponding angular movement of the telescope as measured by the micrometer on some distant fixed object.

The method by level-trier is more accurate than the one by the micrometer, as the latter involves the uncertainty of constant bisection with the micrometer thread.

Electrical Apparatus.—The switchboard which has been used for many years very satisfactorily in connection with the Canadian transcontinental longitude work, was used at every station. For clock exchange by cable all its parts were not required; it then only served for the observations themselves by making the necessary connection between clock, chronograph and observing key.