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tity. The programmes were always so arranged that each observer would, with clear sky, have completed his first time determination, that is, would have observed one set clamp east and one set clamp west, before the time of exchange, generally at 9.30 p.m., of clock signals. These signals would therefore fall between the first and second independent time determinations. It is all-important that the respective clock errors be accurately known at the time of exchange of clock signals. This is best obtained and assured when there is a time determination immediately preceding and one immediately following such exchange. Through clouds or rain, or other unpropitious weather it was not always possible to obtain the time determination when desired.

Exchange on Cable.—Along the whole system of the Pacific cable Greenwich mean time is used for the commercial work. For Fiji through which runs the anti-meridian of Greenwich, the Greenwich mean time 12 hour clock dials would practically show local time for Suva. It was desirable in the cable offices that the time for exchange of clock signals be fixed at some definite time so that the officers could govern themselves accordingly and have the spare cable instrument in readiness at the appointed time. The time was so arranged that the westerly observer had time to obtain his first time determination before the exchange. In the tropics observing may be begun almost immediately after sunset, as there is little twilight. The exchange consisted in each observer sending alternately not less than thirty arbitrary signals at irregular intervals, averaging about two seconds apart, the interval being always sufficiently long to permit the siphon to have well resumed its normal position in tracing the zero line of dots on the fillet. The signals having been mutually and satisfactorily received, the record of the night's work and of the preceding night was mutually communicated, and this ended the use of the cable for the night. If all went well, the whole exchange of signals and communications would occupy less than ten minutes. This was, however, not always the case; the ink in the siphon might give trouble, or the vibrator, or some other vicissitude for which one must always be prepared not only at the cable instrument, but also in the observatory.

Throughout the whole work, received signals were sealed by Klotz on the cable siphon record, by projecting the 2 second breaks of the clock on the lower or clock siphon record upon the upper one. This method was preferred to projecting the received signals (beginning of deflection of cable siphon) on the lower line to avoid obliterating or obscuring by a pencil line as ordinate the dot or dots (vibration of siphon) indicating the arrival of the signal. In the method pursued, after adjusting the glass scale to cover the intersection of the ordinates from the clock breaks with the zero line of the cable siphon, one could deliberately determine the first indication of the cable siphon leaving its zero line of undisturbed position.

The sealing of the signals sent, which were recorded by both siphons, was always done on the clock siphon record, hence it is necessary to apply to all sealing of signals received, which were recorded of course only on the cable siphon, the parallax of the cable siphon. This parallax was readily obtained from the signals sent, because in that case we have the record for one signal by the two siphons. To test the adjustment of the cable key with the local clock circuit, *i.e.*, whether the two siphons recorded simultaneously, the cable key made a 1 the clock circuit break, the frame carrying the two siphons was lightly tapped after the exchange of signals thereby making simultaneously a break in the two lines made by the siphons, and the absolute parallax expressed in time found. If the apparatus is well adjusted, this absolute parallax is identical with the one obtained as described above. When a difference was found it was confined to about one-hundredth of a second.

Mr. Werry invariably sealed the cable siphon record both for sending and receiving signals on the clock siphon line by projecting the same on that line. The parallax of the siphons was obtained in a manner similar to the one described above.

The accuracy with which a comparison between two clocks or chronometers can be made by means of a cable, is practically only a matter of careful sealing of the time signals on the tape. So that with the tape running out approximately an inch