

# STANDARD TIME.

## Complaints About the Article Offered Jewelers for Home Consumption.

## Interviews with Leading Tradesmen Regarding the Situation—Various Opinions.

For many years past the Western Electric Company of this city has supplied the standard time to several jewelers and others in the city, and formerly also to some of the railroads centering here. Tim Tumbum having been informed that the company, which had always been supposed to get its time from the Dearborn Observatory connected with the Chicago University, had recently ceased to patronize the home institution, and had begun getting the time from the Allegheny Observatory instead, a reporter was detailed to inquire into the matter.

Mr. Enos M. Barton, Vice-President and Superintendent of the Western Electric Company, was first called on. "The change was made long ago," he said. "Though we got the time from the Chicago observatory and paid for it until three weeks ago, yet we have not used it for over a year and a half. The change had to be made because of so many inaccuracies—or alleged inaccuracies. The jewelers here complained of irregularities in the time, and threatened to cease taking it if we did not get our time from the Allegheny Observatory. When a complaint would be made we would get the Allegheny time and find a discrepancy, and then when we would get Washington time to decide it would invariably turn out that the error was in Chicago. At the observatory here they strenuously claimed they were right, though they differed from every observatory in the country. But whether they were or not was nothing to us, the matter being purely a business one. Our customers asked that we get them the time from Allegheny, else they would take their own observations, as some of them had done before, and we complied. We continued, however, to take the time from the home observatory and said nothing about it. When a discrepancy in the time occurred we got the time from Washington and always found it to correspond with Allegheny. The very smallest fraction of a deviation has to be taken into account. No clock is absolutely perfect—approximate accuracy is all that is possible. Frequent observations are necessary for accurate time-keeping. I am told the Allegheny people make more of a business of supplying time, and consequently pay closer attention to it. They supply the Pennsylvania Railroad among others. They have got the reputation for keeping the most accurate time in the United States. We paid the observatory here \$25 a month. Our returns for this work have been so small lately that we could not afford to pay this any longer. Formerly we supplied many of the railroads, but we have none of them now. The Milwaukee & St. Paul takes the time from the Madison observatory, the Michigan Central from Ann Arbor, and many of the other roads have their time regulated by the jewelers in the city. With regard to expense, the Allegheny time is much the cheaper of the two. The only cost is the cost of transmission—one dispatch daily on the Western Union wires from Pittsburg. The observatory there charges us nothing. The total expense is not more than half what we paid the home observatory. Now you understand that I am saying nothing about the time given at this observatory. I don't say that Prof. Hough is inaccurate—I don't know. We were obliged to change long ago and cannot afford to pay for the two places—that covers it all."

### "CARELESS AND INACCURATE."

Mr. Potter, the jeweler, was next called on. He said: "The careless and inaccurate manner in which this matter was managed at the Dearborn Observatory gave us so much trouble that I was obliged to give the Western Electric Company notice about two years ago that they would either have to supply the time from Pittsburg or cancel the contract. It seems to me they are too impecunious at the Chicago Observatory. They cannot afford to keep a man constantly to look after it. They trust mainly to their clock for guidance, and I would rather trust to my own regulator. Then when they took an observation and found the clock say five minutes wrong, they would not let us know anything about it. They simply attached a little weight to the bottom or top of the pendulum, thereby making the clock lose or gain a second every couple of days until they had struck the right time, when they would remove the weight. This was a most dishonest plan to follow. You can readily see how it would act. For instance, I find my regulator losing a second every two days for a week or more. I naturally attribute this to a shake or something of that kind—the variation is so trifling that a very little thing would cause it—and I alter the regulator accordingly. Then after a while I find it gaining a second every two days and I have to alter it as near as I can to its original condition. Now this kind of see-saw time was continually occurring and giving me considerable annoyance. I asked the observatory to let us know when they discovered they were out of time so that we would know we were keeping all right, but they would not acknowledge they were wrong at any time. Prof. Langley, of Allegheny, pays continual attention to time-giving, so that they have got the reputation of being the best in the United States."

### THE UTMOST SATISFACTION.

Mr. E. L. Gifford, of J. B. Mayo & Co., said: "We get our time by sounder from the observatory. Prof. Hough is giving us the utmost satisfaction. For a lengthened period we took our own observations, but that entailed so much trouble, though by no means difficult, that we began taking our time from the Western Electric Company. We took time from them until about a year ago. I don't know why Mr. Mayo changed—I believe I heard him say that the expense was too great for the kind of service he was getting. Mr. Mayo has thoroughly studied up this matter. He is in New York now, and will not be home until Sept. 1. We give the time to five railroads. Since we began getting time direct from the observatory here we have had nothing whatever to complain of. I believe the service we had before that was somewhat imperfect. I know that the astronomical clocks and other apparatus at the observatory are all first-class, and I can see no valid reason why their time should not be as uniformly accurate as the Allegheny time—more so, if anything, when the risks of transmission are considered."

### HAD ELECTRIC SERVICE.

Mr. Church, of Randolph street, said: "I take the time from the Western Electric Company, and their service is not all it should be. For the last eight or ten months, may be, I have found them making mistakes very frequently. There have always been more or less inaccuracies and variations, but it seems to me the service latterly has been about the worst we have had. If my regulator and chronometer are both a few seconds out when the time is signaled, and that both agree, I know it is the service that is at fault. To lose a second one day and gain it another day makes little difference for all practical purposes, and there is no necessity to complain. The errors that occurred I always attributed to imperfect transmission. The observatory might give the time accurately, but when the circuit is broken at the signal clock in the Western Union building an error could readily be made. When the extreme accuracy required is taken into consideration, it is easy to understand how these errors may take place. I see no reason why this observatory should not give the time as well as any other in the country."

### A LITTLE WORSE.

Mr. Hansen, of Matson & Co., said: "We got our time from the Western Electric Company. Small errors are continually occurring. I don't know that the service is any better now than it ever has been—rather worse, I should say, of late. I know the time is taken from Allegheny. Mr. Summers, the Western Union electrician, told me that he had better service from Allegheny than from here. I don't care where they get their time, but I know there is room for improvement."

Mr. Chambers said he took the city time as received from the observatory here, and found it accurate and satisfactory.

The reporter then visited the observatory and was shown the system of time observation by Prof. Colbert. The system would require too much space to describe in detail, but its perfect accuracy need not be doubted. The time occupied by the passage of a star across the sectional wires on the face of the telescope can be indelibly recorded to the smallest perceptible fraction of a second, all possible errors being taken into consideration. The observer, with his eye fixed on the star as seen in the telescope, indicates its passage across each wire by a pressure of his finger on an electric transmitter, the pressure being given simultaneously with the coincidence of the star and the wire. Each of the passages across the twenty-four wires is recorded in a similar manner, and when the mean or average passage for each section is calculated the result must be the nearest possible approach to perfect accuracy. The transmitter in the observer's hand communicates with a chronograph or automatic time-recorder, the large drum of which makes one revolution each sidereal minute. A stylographic pen marks each second in ink on the surface of the drum or on the recording paper which covers it. A pressure on the transmitter results in a slight vibration of the pen, thereby recording indelibly and accurately to one-tenth of a second the time the pressure took place. An ordinary mathematical calculation gives the practical results.

### FOUR CLOCKS.

Instead of there being only one clock as the reporter had inferred there are four clocks and a chronometer at the observatory, including a new standard clock put in about two years ago, which, it is claimed, is one of the most perfect in the country. In a continuance of cloudy weather, when observations cannot be taken, there are, therefore, several standard timepieces to be guided by. This new clock is similar to the one in use at Allegheny.

### PROF. HOUGH.

Prof. Hough was then called on. "I don't think I should say anything on this matter," he

said. "We do not take Mr. Barton's order as final by any means. It is not the small item of payment that would make me care anything about it, but for the credit of Chicago. I hold, and can prove, that our time-giving is at least as perfect as that of any observatory in the United States. Since I took charge here we have never been a full second out of time. I have paid the closest attention to it, and have never been a full week away from the observatory since I took it in charge. They make mistakes at the Union office and attribute it to the observatory. One time they jumped about seven or eight seconds and tried to make it appear they got it from here, whereas the operator had caught the wrong end of the tick. They their clock may 'trip' or jump ahead, and in various ways errors might occur which could not occur here, but the blame of which would be thrown upon us. Our meridian instrument is one of the best, at least, in the country, and superior to the one in use at Allegheny. Last year I took 140 daily observations, equal to one every two and a half days or so. In cloudy weather we must depend on the clock, and with our new clock and three other standard clocks and a marine chronometer there is no possibility of our going astray more than a small fraction of a second. As I said before, we have never been a full second out of time since I came here. I have been here about four years, and have been giving time for over twenty years. I was the first to put a clock on a telegraph-wire—the first to send a tick over the wires—and I guess I know the business. I don't want to talk about this matter until the Astronomical Society reports upon it. Mr. Clinton Briggs has been deputed to wait on Mr. Stager, the President of the Western Electric Company, and report to the society. I believe the company has had a grudge against this observatory since before I came to it, but I don't wish to comment upon that until the matter is finally decided. Call in the fire-alarm office, where there is a standard clock, and they will tell you whether the time from here over varies a second."

### MR. HANNEY.

Mr. H. C. Hanney, Treasurer of the Astronomical Society, and Mr. Summers, the Western Union electrician, were also called on, but, though giving diametrically opposite opinions, neither added anything to the statements already given. The question seems to be still rather mixed and very far from being settled.