Using a 10 day interval, the values in the third column will be 10 times the mean motion, n, and those in the fourth column will be 200 times the acceleration coefficient. As outlined in previous ITCP Bulletins, predictions may be made by interpolation in such a table. Its form is comparable to that of the Daily Satellite Ephemerides.

The prediction procedure involves the calculation of a time, JNL, at which the satellite is expected to appear at a particular position such as the point of local culmination. For this position, we will have calculated a value of PRM. The observation then represents a measurement of the actual time at which the satellite appeared at, or very near this position. As a meticulous observer, I will have measured this time to $\pm$ 0^d.0000001. I will then use this actual time to recalculate the position and will correct for differences between the calculated and actual point of observation. I will also make corrections for effects of the pear shape and the ellipticity of the equator. All of this is done with the objective of obtaining a measured value of PRM that is accurate to about $\pm$ 0^t.00001.

Another observer, Mr. X, may either be less meticulous or may lack the means for making precise observations. He may simply use the predicted value of PRM as a measured value to correspond with his measurement of the time. We can assume that his accuracy is $\pm$ 0^d.00001 in timing and $\pm$ 0^t.001 in PRM. Let us then assume that Mr. X and I both start tracking 1960 Nu 2, using the above table and the Gear Ratio Elements. For convenience, we will also assume that his location is the same as mine and that he makes each observation at the same time that I do. After about 60 days, our records of observations might compare as shown in Table V.

TABLE V

RECORD OF OBSERVATIONS

Comparing Log of a Meticulous Observer (W.P.O) with Log of a Casual Observer (Mr. X)

JNL	Predicted PRM	W. P. O. PRM	W. P. O. Resid.	Mr. X PRM	Mr. X Resid.
38462.40113315	16899.946438	16899.946518	+80	16899.9469	+400
38482.05088329	17165.472894	17165.473397	+503	17165.4732	+300
38484.04727861	17192.450126	17192.450724	+598	17192.4512	+1100
38485.08494712	17206.472112	17206.472747	+635	17206.4728	+700
38486.04369964	17219.427707	17219.428390	+683	17219.4280	+300
38494.02957430	17327.340616	17327.341718	+1102	17327.3416	+1000
38495.06723367	17341.362480	17341.363653	+1173	17341.3642	+1700
38497.06365582	17368.340068	17368.341367	+1299	17368.3410	+900

We can assume that Mr. X's values of JNL will be the same as mine (in the first column) except that they will include only five digits to the right of the decimal.

In the above table, each "residual" column represents the difference between the observed values and the predicted values, which are in the second column. As we proceed, Mr. X and I will both plot these residuals against time, as shown in Figure 2.