ASTRONOMICAL OBSERVATORY OF MILAN

CIRCULAR N. 23

(Editor Prof. F. Zagar)

February 1967

R.A. OBSERVATIONS OF THE PLANET VENUS

(1960 - 1965)

by

E. Proverbio

The meridian observations of the planet Venus are begun in the 1960 utilising the fundamental transit instrument Askania Ap 100.

The azimuth of the instrument was determined, every time was possible, by use of the North mark.

The azimuth of the mark was determined by observations of equatorial and circumpolar stars during the nightly time determinations.

When the azimuth of the mark was not available a interpolated or extrapolated azimuth, calculated by observed azimuths in the following and feregoing days the planet observation, was utilised.

Corrections to the FK3 R were applied to the apparent places of the clockstar used in determining the clockcorrection for 1960 and 1961. From 1962 the right ascension were reduced to the system of FK4 .

The clockcorrectionsused in the reduction of all right ascension observations have been obtained from the smoothing curves of the observed clockcorrections.

No correction for day minus night difference was brought to the A.R. observed.

The time scale used in these reductions is the $UT2_{Mi}$ time scale.

The observed positions are geocentric and have received the usual corrections for instrumental errors and diurnal aberration.

All the observations of the planet were made on the illuminated limb and reduced to the center of the planet using the values of the semidiameter given in the American Ephemeris.

For reducing the instant of the observed R.A. from Universal Time in Ephemeris time have been used the following corrections

Year	Δ T
1960	+ 33^{s}.20
1961	33.54
1962	34. 2
1963	35.
1964	35.
1965	35.

In the table are given the differences (O - C) between the observed and calculated R.A. of the planet Venus.

Date	Obs.E.T.	J.D. 24	Limb	Obs.R.A.	(O - C)
60 11	20.578312	37259.08	I	$18^h27^m50^s.978$	$- 0^s.122$
60 12	25.605081	37294.11	I	21 23 53.113	- .177
61 2	19.596771	37350.10	I	00 52 44.023	- .257
61 3	2.584932	37361.08	I	01 19 01.738	+ .168
61 3	3.584930	37362.08	I	01 20 57.914	+ .184
61 3	6.579034	37365.08	I	01 26 16.296	- .044
61 3	7.577396	37366.08	I	01 27 50.678	- .122
61 3	8.575684	37367.08	I	01 29 18.845	- .215
61 5	24.357987	37443.35	II	01 18 30.403	+ .143
61 5	25.357294	37444.36	II	01 21 06.613	+ .163
61 6	7.348473	37457.35	II	01 59 57.668	+ .228
61 7	31.356253	37511.36	II	05 44 06.152	+ .192
61 8	1.356853	37512.36	II	05 48 55.142	- .038
61 8	2.357478	37513.36	II	05 53 45.744	+ .194
61 8	3.358102	37514.36	II	05 58 36.332	- .058
61 8	4.358744	37515.36	II	06 03 28.381	+ .091
61 8	8.361383	37519.36	II	06 23 03.309	- .021
61 8	9.362064	37520.36	II	06 27 58.884	+ .144
61 8	10.362755	37521.36	II	06 32 54.703	+ .073
61 8	11.363439	37522.36	II	06 37 51.295	+ .255

Date	Obs.E.T.	J.D. 24	Limb	Obs.R.A.	(O - C)
61 8	12.364133	37523.36	II	$06^h42^m47^s.988$	+ $0^s.098$
61 8	18.368386	37529.36	II	07 12 35.565	+ .055
61 8	23.371968	37534.37	II	07 37 28.646	+ .076
61 8	29.376218	37540.38	II	08 07 16.335	- .065
61 8	30.376916	37541.38	II	08 12 13.350	- .090
61 9	1.378301	37543.38	II	08 22 06.515	+ .055
61 9	4.380338	37546.38	II	08 36 52.652	- .038
61 9	19.389623	37561.39	II	09 58 54.826	+ .076
61 9	21.390732	37563.39	II	09 49 25.231	- .139
61 9	23.391812	37565.39	II	09 58 54.826	- .076
61 10	9.399532	37581.40	II	10 08 20.940	- .100
61 10	10.399972	37582.40	II	11 27 09.531	- .089
61 10	11.400411	37583.40	II	11 31 43.980	+ .080
61 10	12.400960	37584.40	II	11 36 18.652	+ .092
61 10	13.401280	37585.40	II	11 40 52.597	- .063
61 10	14.401711	37586.40	II	11 45 26.404	- .226
61 10	19.403852	37591.40	II	12 08 14.975	- .065
61 10	23.405690	37595.41	II	12 26 30.224	- .036
61 10	24.406009	37596.41	II	12 31 04.437	- .063
62 5	30.564534	37815.06	I	06 39 27.363	- .218

Date	Obs.E.T.	J.D. 24	Limb	Obs.R.A.	(O - C)
62 6	7.571703	37823.07	I	$07^h21^m21^s.258$	+ $0^s.088$
62 7	2.588497	37847.08	I	09 24 10 167	+ .057
62 7	11.591943	37857.09	I	10 04 38.328	+ .118
62 7	16.593274	37862.09	I	10 26 16.737	+ .227
62 7	18.593696	37864.09	I	10 34 46.257	- .053
62 7	20.594062	37866.09	I	10 43 10.911	- .059
62 7	24.594638	37870.09	I	10 59 45.736	+ .056
62 7	26.594838	37872.09	I	11 07 56.152	- .018
62 7	27.594920	37873.09	I	11 11 59.708	- .072
62 7	30.595092	37876.10	I	11 24 04.618	+ .198
62 8	1.595150	37878.10	I	11 28 07.897	- .083
62 8	2.595157	37879.10	I	11 32 02.763	+ .223
62 8	3.595157	37880.10	I	11 39 56.969	+ .130
62 8	7.595061	37884.10	I	11.55 34.801	+ .170
62 8	8.594986	37885.09	I	11.59 26.861	- .020
62 8	10.594886	37887.09	I	12 07 09.086	+ .130
62 8	13.594626	37890.09	I	12 18 36.207	+ .190
62 8	14.594519	37891.09	I	12 22 23.683	+ .220
62 8	16.594359	37893.09	I	12 29 56.011	- .079
62 8	22.593363	37899.09	I	12 52 16.179	- .151

Date	Obs.E.T.	J.D. 24	Limb	Obs.R.A.	(O - C)
62 8	27.592372	37904.09	I	$13^h10^m33^s.569$	$-0^s.200$
62 8	30.591766	37907.09	I	13 21 23.365	- .005
62 9	5.590040	37913.09	I	13 42 39.841	+ .211
62 9	26.579608	37934.08	I	14 50 24.085	+ .005
62 12	20.356420	38018.36	II	15 03 11.656	+ .094
63 1	23.344306	38052.34	II	16 59 46.665	- .095
63 1	25.344807	38054.34	II	17 08 21.328	- .072
63 1	26.345081	38055.35	II	17 12 42.077	+ .097
63 1	28.345697	38057.35	II	17 21 27.968	+ .168
63 1	29.346031	38058.35	II	17 25 53.476	- .184
63 2	1.347165	38061.35	II	17 39 20.900	- .020
63 2	5.348909	38065.35	II	17 57 38.755	+ .135
63 2	6.349372	38066.35	II	18 02 16.630	+ .150
63 2	26.361052	38086.36	II	19 37 59.514	+ .094
63 2	27.361691	38087.36	II	19 42 51.013	- .077
63 3	1.362953	38089.36	II	19 52 34.511	+ .131
63 3	4.364858	38092.36	II	20 07 08.674	+ .134
63 3	5.365481	38093.37	II	20 11 59.768	+ .218
63 3	7.366733	38095.37	II	20 21 40.874	+ .114
63 3	13.370376	38101.37	II	20 50 35.764	+ .164

Date	Obs.E.T.	J.D.	Limb	Obs.R.A.	(O - C)
		24			
63 3	14.370962	38102.37	II	$20^h55^m23^s.272$	+ 0.102
63 4	1.380353	38120.38	II	22 19 54.605	- .155
63 4	2.380805	38121.38	II	22 24 30.313	+ .083
63 4	3.381245	38122.38	II	22 29 05.011	- .079
63 4	12.384930	38131.38	II	23 09 53.572	- .072
63 4	17.386796	38136.39	II	23 32 17.971	- .019
63 4	29.391013	38148.39	II	00 25 41.877	+ .007
63 4	30.391360	38149.39	II	00 30 08.737	+ .187
63 5	6.393490	38155.39	II	00 56 52.187	+ .087
63 5	7.393854	38156.39	II	01 01 20.349	+ .049
63 5	8.394225	38157.39	II	01 05 49.114	+ .254
63 5	9.394597	38158.39	II	01 10 17.852	+ .032
63 5	20.399132	38169.40	II	02 00 12.955	+ .195
63 5	22.400060	38171.40	II	02 09 27.324	- .116
63 5	27.403947	38176.27	II	02 34 45.881	+ .051
64 2	7.585887	38433.09	I	23 46 47.732	- .118
64 2	10.586662	38436.09	I	23 59 44.867	+ .006
64 2	13.587392	38439.09	I	23 12 37.652	+ .022
64 5	5.596939	38521.10	I	05 49 42.826	- .064
64 5	6.596292	38522.10	I	05 52 42.274	- .086

Date	Obs.E.T.	J.D. 24	Limb	Obs.R.A.	(O - C)
64 5	14.588947	38530.09	I	$06^h13^m19^s.249$	- 0.141
64 9	9.348628	38647.35	II	08 11 50.517	+ .067
64 9	10.348895	38648.35	II	08 16 10.095	+ .155
64 9	11.349167	38649.35	II	08 20 30 387	+ .127
64 9	12.349451	38650.35	II	08 24 51.523	+ .153
64 9	17.350985	38655.35	II	08 46 47.056	+ .206
64 9	21.352310	38659.35	II	09 04 28.266	+ .106
64 9	22.352653	38660.35	II	09 08 54.398	+ .028
64 9	23.353001	38661.35	II	09 13 20.980	+ .120
64 9	24.353348	38662.35	II	09 17 47.549	- .051
64 9	28.354761	38666.35	II	09 35 36.257	- .153
64 9	29.355119	38667.36	II	09 40 03.875	- .125
64 9	30.355475	38668.36	II	09 44 31.452	+ .002
64 10	6.357619	38674.36	II	10 11 16.619	+ .019
64 10	7.357975	38675.36	II	10 15 43.998	+ .078
64 10	9.358682	38677.36	II	10 24 38.282	- .008
64 10	10.359035	38678.36	II	10 29 05.283	- .047
64 10	13.360071	38681.36	II	10 42 25.830	+ .030
64 10	14.360432	38682.36	II	10 46 52.372	- .058
64 10	17.361579	38685.36	II	11 00 11.764	- .036

Date	Obs.E.T.	J.D.	Limb	Obs.R.A.	(O - C)
		24			
64 10	19.361454	38687.36	II	$11^h09^m04^s.280$	+ 0.150
64 10	22.363175	38690.36	II	11 22 22.923	+ .033
64 11	2.366299	38701.37	II	12 11 15.903	+ .023
64 11	5.368080	38704.37	II	12 24 39.633	- .047
64 11	6.368450	38705.37	II	12 29 08.379	- .041
64 11	17.372826	38716.37	II	13 18 49.387	- .013
64 11	18.373260	38717.37	II	13 23 23.723	- .087
64 11	20.374159	38719.37	II	13 32 34.733	- .037
64 11	30.379239	38729.38	II	14 19 20.295	+ .025
64 12	3.380979	38732.38	II	14 33 40.825	- .005
64 12	5.382202	38734.38	II	14 43 19.851	- .039
64 12	11.386183	38740.39	II	14 12 44.242	+ .122
65 1	4.406815	38764.40	II	17 17 09.066	+ .036
65 1	5.407809	38765.41	II	17 22 31.859	- .061
65 1	7.409823	38767.41	II	17 33 19.368	- .122
65 1	8.410884	38768.41	II	17 38 43.998	- .092
65 1	20.423256	38780.42	II	18 18 43.364	- .006
65 9	14.572675	39018.07	I	13 54 08.259	+ .139
65 9	21.575182	39025.07	I	14 25 21.446	+ .054
65 10	26.594194	39060.09	I	17 10 47.737	- .203