Positions of minor planets and the orbit of new minor planets, discovered by H. van Gent

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Positions of minor planets and the orbits of new minor planets, discovered by H. VAN GENT,

by *G. Pels.*

On the plates taken at Johannesburg with the 10-inch Franklin-Adams camera Dr. VAN GENT has identified the minor planets of which the positions are communicated in this note. The plates have been measured at Leiden in the new Schlesinger measuring machine and the reductions have been performed according to COMRIE's method (*J. B. A. A.* vol. 39, p. 203). The positions are the average of two, measured and reduced independently on plates taken after each other on the same night.

The magnitudes have been estimated by Dr. VAN GENT.

Planet	Mag.	Date Gr. C. T.	α_{1900}	δ_{1900}	Comparison stars
		1934	h m s	° ′ ″	
5	10·5	June 8·89924	16 43 28·23	— 14 18 53·1	Tacubaya 16^h44^m, — 15°: 29, 30, 33
9	9	Sept. 9·95419	0 20 28·93	— 8 2 1·0	San Fern. 0^h24^m, — 8°: 2, 6, 11
	8·5	„ 29·88503	0 2 24·42	— 9 47 25·9	„ 0^h4^m, — 9°: 26, 32, 47
50	12·6	May 11·02482	17 23 58·25	— 19 8 35·3	Hyd. 17^h24^m, — 19°: 46235, 46259, 46279
	12·5	June 8·98685	16 59 57·48	— 18 16 56·8	„ 16^h56^m, — 18°: 45236, 45243, 45257
69	10·5	May 10·93756	16 37 35·30	— 11 45 41·9	Cambr. (Mass.) 5755, 5759, 5763
	11·0	June 8·89924	16 15 7·80	— 10 17 14·5	Wien 5673, 5674, Cambr. (Mass.) 5652
110	10·0	May 11·02482	17 7 47·61	— 24 40 56·5	Cordoba 17^h8^m, — 25°: 32, 42, 50
	11·0	June 8·94270	16 42 22·56	— 25 10 44·0	„ 16^h44^m, — 25°: 39, 40, 994
139	11·5	Sept. 9·91056	23 49 4·25	— 3 53 14·1	San Fern. 23^h52^m, — 4°: 16, 17, 26
	11·5	„ 15·81280	23 44 1·54	— 4 10 41·7	„ 23^h44^m, — 4°: 70, 76, 83
	11·5	„ 29·79396	23 32 1·33	— 4 49 11·2	„ 23^h32^m, — 5°: 68, 78, 87
	12·0	Oct. 26·76543	23 14 47·96	— 5 23 20·0	„ 23^h16^m, — 5°: 51, 53, 78
171	12·4	June 8·98685	17 24 14·66	— 21 53 34·0	Hyd. 17^h28^m, — 22°: 57546, 57570, 57610
175	12·2	June 13·79210	15 54 48·68	— 23 40 16·0	Cordoba 15^h52^m, — 24°: 592, 594, 607
207	12·0	Sept. 9·95419	0 32 27·95	— 0 4 13·1	Algiers 0^h32^m, 0°: 42, 134, 136
	12·0	Oct. 12·83707	0 1 27·47	— 2 25 0·6	„ 0^h0^m, — 2°: 142, 145, 151
	12·0	Nov. 6·82837	23 47 42·93	— 2 54 10·1	San Fern. 23^h48^m, — 3°: 76, 98, 100
251	13·7	Sept. 9·95419	0 4 17·12	— 4 55 33·2	San Fern. 0^h4^m, — 5°: 90, 101, 113
252	13·3	May 10·93756	16 36 17·29	— 12 37 2·9	Cambr. (Mass.) 5749, 5757, 5759
266	11·8	May 10·98171	16 34 35·22	— 19 21 16·4	Hyd. 16^h36^m, — 19°: 44489, 44495, 44496
384	13·9	May 11·02482	16 53 49·46	— 25 16 28·4	Cordoba 16^h52^m, — 25°: 692, 724, 726
	13·8	June 8·94270	16 26 52·16	— 25 12 46·0	„ 16^h28^m, — 25°: 253, 258, 296
401	13·1	Sept. 9·95419	0 37 19·31	— 1 25 53·5	Algiers 0^h36^m, — 1°: 28, 67, 75
	13·2	„ 9·99770	0 37 17·73	— 1 26 4·2	id.
425	13·0	Sept. 9·95419	0 18 59·64	— 3 46 26·5	San Fern. 0^h16^m, — 4°: 140, 141, 155
	13·2	Nov. 6·82837	23 42 28·50	— 6 34 14·0	„ 23^h40^m, — 7°: 103, 107, 113

Planet	Mag.	Date Gr. C. T.	α_{1900}	δ_{1900}	Comparison stars
			h m s	° ′ ″	
431	13·2	May 10·98171	16 14 55·46	— 18 · 58 34·0	Hyd. 16^h12^m, — 19°: 44021, 44022, 44024
	13·2	June 13·79210	15 48 5·96	— 17 52 58·6	„ 15^h52^m, — 18°: 43304, 43305, 43330
492	13·8	May 10·98171	16 23 10·52	— 22 13 22·2	Hyd. 16^h24^m, — 22°: 55329, 55330, 55335
526	13·6	Sept. 9·95419	0 4 39·01	— 1 34 5·5	Algiers 0^h8^m, — 2°: 1, 2, 3
534	13·2	June 8·98685	17 13 26·77	— 21 42 51·6	Hyd. 17^h12^m, — 22°: 56848, 56869, 56880
535	13·0	Sept. 29·88503	23 58 8·46	— 11 59 54·0	Cambr. (Mass.) 8331, 8332, 8335
627	13·2	Sept. 9·91056	23 52 32·61	— 6 19 9·1	San Fern. 23^h52^m, — 6°: 45, 49, 64
	13·7	„ 15·81280	23 48 17·63	— 7 0 53·1	„ 23^h48^m, — 7°: 75, 81, 97
	12·8	„ 29·79396	23 38 6·77	— 8 31 37·9	„ 23^h40^m, — 9°: 27, 29, 47
660	12·8	Sept. 9·95419	0 6 19·03	— 7 35 13·9	San Fern. 0^h8^m, — 8°: 57, 69, 82
693	12·5	Sept. 9·91056	23 26 22·07	— 4 52 52·0	San Fern. 23^h24^m, — 5°: 103, 108, 109
734	13·4	Sept. 9·95419	0 9 19·88	— 0 11 38·4	Algiers 0^h8^m, 0°: 83, 91, 92
749	14·0	Sept. 9·99770	0 55 47·35	— 3 9 46·9	San Fern. 1^h0^m, — 3°: 1, 2, 5
764	14·0	May 10·98171	16 22 35·94	— 25 35 49·1	Cordoba 16^h24^m, — 26°: 795, 814, 816
767	13·0	May 10·98171	16 21 41·94	— 19 33 1·9	Hyd. 16^h20^m, — 19°: 44200, 44203, 44207
924	11·5	Sept. 9·91056	23 49 18·55	— 7 1 54·4	San Fern. 23^h48^m, — 7°: 109, 113, 114
	11·5	„ 15·81280	23 45 23·11	— 7 54 9·2	„ 23^h44^m, — 8°: 86, 88, 99
1059	13·3	Oct. 12·92364	0 37 58·36	+ 6 6 11·7	Toulouse 0^h36^m, + 7°: 59, 63, 64
1074	13·5	Sept. 9·95419	0 7 11·56	— 0 11 51·1	Algiers 0^h8^m, 0°: 17, 76, 83
1249	13·8	May 10·98171	16 13 30·46	— 24 9 39·0	Cordoba 16^h16^m, — 24°: 523, 524, 527
?	12·0	May 10·98171	16 22 23·09	— 24 28 21·0	Cordoba 16^h24^m, — 24°: 616, 617, 622
?	13·9	May 22·00102	16 35 37·84	— 23 49 55·1	Hyd. 16^h36^m, — 23°: 63118, 63123, 63126

The following rough positions are of minor planets found on the plates of the var. stars programma 19^h, —19°. The magnitudes have been estimated by Mr. UITTERDIJK.

Planet	Mag.	Date Gr. C.T.	α_{1925}	δ_{1925}
		1934	h m	° ′
103	12·4	May 8·04410	19 4·7	— 16 57
	12·5	„ 11·09425	19 5·0	— 16 56
	11·5	June 9·07460	18 58·2	— 16 58
	11·1	„ 12·84504	18 55·6	— 17 3
263	15·0	July 1·75507	19 7·4	— 20 45
	14·6	„ 7·77365	19 2·0	— 20 51
	14·7	„ 10·99678	18 59·5	— 20 55
441	13·7	May 8·04410	19 0·6	— 20 12
	14·0	„ 11·09425	19 0·5	— 20 6
	13·4	June 9·07460	18 48·0	— 19 0
	13·2	„ 12·84504	18 45·3	— 18 52
530	13·8	June 9·07460	19 3·1	— 15 35
607	14·4	July 14·83903	19 19·0	— 21 9

The orbit computations were made by the method GAUSS-ENCKE as modified for the use of calculating machines by VEITHEN-MERTON.

The elements of the new planets are:

Provisional designation	g	M_0	ω	Ω	i	φ	μ	a
	m	°	°	°	°	°	″	
1934 RV	11·0	354·52650	159·81153	204·71587	0·01195	11·51280	657″·516	3·076 5659
1930 QI	11·7	344·19428	28·60023	351·83337	4·68124	10·27388	904·344	2·487 6110
1934 RW	10·3	32·19473	223·80593	97·36228	3·19551	3·38186	736·725	2·851 8931
1928 OC	9·7	153·02729	138·69551	63·00617	2·33543	3·63371	677·421	3·016 0000
1934 RO	10·6	358·78450	213·93596	151·53242	2·40719	6·19279	725·985	2·879 9577
1934 RX	11·0	314·69569	273·90629	153·16862	11·83079	10·57854	810·281	2·676 5765
1934 RY	11·9	8·99975	238·42552	113·93368	7·76539	10·39351	869·567	2·553 5050
1934 RZ	10·4	299·88678	17·43591	59·45044	10·55731	5·95014	717·925	2·901 4705
1934 TF	9·4	320·78958	47·43105	10·70926	9·68912	5·34738	624·026	3·185 6634
1934 RA_1	10·6	7·86282	199·20159	160·45335	17·99919	5·79693	714·870	2·909 7356
1934 SB	12·3	355·05987	355·06573	13·28694	11·10246	14·92504	958·527	2·392 9583
1934 IM	10·5	328·41391	225·21326	58·82508	11·28384	4·46116	678·690	3·012 2493

M_0 on Oct. 1·0 1934 Gr. C. T., except for 1934 I M, when it is May 27·0 1934 Gr. C. T. Mean equinox and ecliptic of 1925·0.

The observations and their comparison with the ephemeris computed according to the above elements are as follows:

1934 R V:

Date Gr. C.T.	α_{1925}	δ_{1925}	mag.	$O-C$ in α	$O-C$ in δ	Comparison stars
1934	h m s	° ′ ″		s	″	h m °
Sept. 9·91056	23 34 16·69	−2 46 5·2	14·0	·00	·0	San Fern. 23 32 , −3 : 113, 115, 133
,, 15·81280	29 56·35	3 14 3·4	13·9	·00	−1·0	,, 23 32 , −3 : 10, 15, 16
,, 30·84006	19 25·05	4 21 28·6	13·7	·00	−·6	,, 23 20 , −4 : 33, 34, 53
Oct. 11·82041	13 38·13	4 58 15·0	14·0	·00	·0	,, 23 16 , −5 : 2, 3, 14

1930 Q I:

Date Gr. C.T.	α_{1925}	δ_{1925}	mag.	$O-C$ in α	$O-C$ in δ	Comparison stars
1934	h m s	° ′ ″		s	″	h m °
Sept. 9·91056	23 36 50·57	−2 48 0·5	13·2	+·01	+·1	San Fern. 23 32 , −3 : 201, 210, 213
,, 15·81280	31 23·70	3 1 48·7	13·7	+·51	+·7	,, 23 32 , −3 : 45, 56, 66
,, 30·84006	18 1·99	3 33 40·1	13·4	+·01	·0	,, 23 20 , −4 : 11, 19, 22
Oct. 11·82041	10 47·21	3 44 30·1	13·8	−·09	−2·6	,, 23 12 , −4 : 10, 14, 30
,, 26·76543	6 45·08	3 30 52·9	13·8	+·01	+·1	,, 23 4 , −4 : 183, 191, 206
Nov. 5·79013	8 10·94	3 1 34·4	14·0	+·16	+6·8	,, 23 8 , −3 : 67, 70, 75

The position on Nov. 5·79 has been found after the computation of the orbit with the aid of the ephemeris. The images were very faint.

According to an information by Prof. G. STRACKE there are already elements of 1930, computed by S. BELJAWSKY, which agree better with the positions of 1934 than the above-mentioned do with the positions of 1930.

1934 R W:

Date Gr. C.T.	α_{1925}	δ_{1925}	mag.	$O-C$ in α	$O-C$ in δ	Comparison stars
1934	h m s	° ′ ″		s	″	h m °
Sept. 9·91056	23 52 58·10	−6 5 30·7	13·9	·00	·0	San Fern. 23 52 , −6 : 45, 49, 64
,, 15·81280	48 24·88	6 38 3·8	13·5	+·15	+·7	,, 23 48 , −7 : 54, 59, 81
,, 29·79396	37 34·24	7 47 23·8	13·2	·00	+·1	,, 23 36 , −8 : 69, 82, 83
Oct. 11·86404	29 39·57	8 29 25·2	13·9	+·01	+·1	,, 23 32 , −9 : 17, 25, 46
,, 26·76543	23 41·48	8 49 22·4	14·0	+·25	−·4	,, 23 24 , −9 : 41, 49, 55
Nov. 5·79013	22 33·29	8 41 57·1	14·0	+·11	+1·8	,, 23 24 , −9 : 16, 25, 41

The positions on Oct. 26 en Nov. 5, found afterwards with the aid of the ephemeris are very uncertain.

1928 O C:

Date Gr. C.T.	α_{1925}	δ_{1925}	mag.	O—C in α	O—C in δ	Comparison stars
1928	h m s	° ′ ″		s	″	h m °
Sept. 9·91056	23 57 18·33	−3 44 23·0	14·0	·00	·0	San Fern. 0 0 , −4 : 3, 4, 8
,, 15·81280	52 57·57	4 12 6·0	14·0	+·15	+·7	,, 23 52 , −4 : 55, 64, 77
,, 29·79396	42 29·27	5 14 42·5	13·5	·00	·0	,, 23 40 , −5 : 97, 102, 103
Oct. 11·86404	34 28·20	5 57 50·6	14·0	·00	·0	,, 23 36 , −6 : 9, 22, 26
Nov. 5·79013	25 16·50	6 32 4·6	14·0	−·47	−7·6	,, 23 24 , −7 : 49, 71, 75
,, 6·82837	25 9·81	6 31 44·0	14·0	−·20	−9·4	,, 23 24 , −7 : 49, 71, 75

Again the two last positions found afterwards, are very uncertain, at least not suitable to be used for a recomputation of the orbit. The elements represent sufficiently the observations of 1928; a correction is thus not necessary.

It has obtained the definitive number 1305.

1934 R O:

Date Gr. C.T.	α_{1925}	δ_{1925}	mag.	O—C in α	O—C in δ	Comparison stars
1934	h m s	° ′ ″		s	″	
Sept. 8·96549	0 26 26·42	+0 57 34·3		−·04	−4·3	h m °
,, 9·95419	0 25 50·02	+0 52 33·8	13·4	−·00	·0	Algiers 0 28 , +1 : 84, 90, 94
,, 13·03082	0 23 50·70	+0 35 44·0		−·29	−1·3	
,, 14·94158	0 22 32·64	+0 25 0·3		−·63	−1·5	
,, 16·99048	0 21 6·22	+0 13 20·1	13·8	−·77	−3·8	,, 0 24 , 0 : 1, 93, 98
,, 17·97938	0 20 23·62	+0 7 27·8		−·69	−5·1	
,, 29·83863	0 11 28·41	−1 2 19·2	13·6	·00	·0	,, 0 12 , −1 : 111, 120, 125
Oct. 3·92568	0 8 23·65	−1 25 43·3		−·23	+2·3	
,, 12·83707	0 2 9·93	−2 11 44·3	13·2	·00	·0	,, 0 0 , −2 : 135, 142, 145

The positions of Sept. 8 and Sept. 17 are of Heidelberg, those of Sept. 13, 14 and Oct. 3 of Uccle.

1934 R X:

Date Gr. C.T.	α_{1925}	δ_{1925}	mag.	O—C in α	O—C in δ	Comparison stars
1934	h m s	° ′ ″		s	″	h m °
Sept. 9·95419	0 35 33·67	−5 16 57·7	13·8	·00	·0	San Fern. 0 36 , −5 : 24, 30, 33
,, 16·99048	31 27·25	6 32 36·1	13·5	−·19	−2·5	,, 0 28 , −7 : 102, 103, 118
,, 29·88503	22 20·57	8 50 0·8	13·4	·00	·0	,, 0 20 , −9 : 83, 86, 101
Oct. 12·79344	13 0·37	10 46 29·0	13·8	·00	·0	Cambr. (Mass.) 29, 43, 48
Nov. 3·95014	2 52·84	12 30 34·4	14·0	−1·04	+2·6	,, 6, 7, 13

The position of Nov. 3 is uncertain.

1934 R Y:

Date Gr. C.T.	α_{1925}	δ_{1925}	mag.	O—C in α	O—C in δ	Comparison stars
1934	h m s	° ′ ″		s	″	h m °
Sept. 9·99770	0 50 48·90	−8 35 46·0	14·0	·00	·0	San Fern. 0 52 , −9 : 21, 35, 40
,, 29·92866	37 17·61	11 9 58·5	13·6	·00	·0	Cambr. (Mass.) 127, 128, 135
Oct. 12·79344	27 20·99	12 11 41·8	13·8	·00	·0	,, 88, 104, 108
Nov. 3·95014	16 44·00	12 6 41·3	14·0	−2·48	+1·9	,, 49, 53, 58

The position of Nov. 3 is all the same too uncertain, to compute a new orbit.

1934 R Z:

Date Gr. C.T.	α_{1925}	δ_{1925}	mag.	O—C in α	O—C in δ	Comparison stars
1934	h m s	° ′ ″		s	″	h m °
Sept. 9·99770	0 58 43·28	−8 23 16·9	14·0	·00	·0	San Fern. 1 0 , −9 : 13, 22, 26
,, 17·03411	54 2·30	8 53 44·2	14·0	−·06	−1·4	,, 0 52 , −9 : 84, 87, 96
,, 29·92866	43 40·53	9 42 58·0	13·8	·00	·0	, 0 44 , −9 : 36, 45, 55
Oct. 12·79344	32 35·07	10 13 7·9	13·8	·00	·0	Cambr. (Mass.) 109, 112, 117
Nov. 3·95014	17 29·17	9 56 49·9	14·0	−1·07	+23·0	,, 55, 57, 61

The images on Nov. 3 are very faint.

1934 T F:

Date Gr. C.T.	α_{1925}	δ_{1925}	mag.	O—C in α	O—C in δ	Comparison stars
1934	h m s	° ′ ″		s	″	h m °
Sept. 10·04145	1 5 28·87	+ 6 5 57·0	13·5	·00	·0	Toulouse 1 0 , + 7 : 95; 1 8 , + 5 : 1, 5
,, 17·07843	1 1 8·45	6 0 15·5	13·5	+ ·18	+ ·4	,, 1 0 , + 5 : 9, 27, 29
Oct. 1·89504	0 49 47·72	5 37 3·0	13·0	·00	·0	,, 0 52 , + 5: 2, 5, 7
,, 12·92364	0 40 35·18	5 14 59·3	13·3	·00	·0	,, 0 36 , + 5: 97, 189, 199

According to a letter from Prof. G. STRACKE there are not yet measured positions of this planet on Oct. 5 and Nov. 7 with which it would be possible to compute an improved orbit.

1934 R A_1

Date Gr. C.T.	α_{1925}	δ_{1925}	mag.	O—C in α	O—C in δ	Comparison stars
1934	h m s	° ′ ″		s	″	h m °
Sept. 9·99770	1 5 52·54	— 5 1 35·1	14·0	+ ·02	·0	San Fern. 1 8 , — 5 : 1, 4, 16
,, 17·03411	1 2 44·65	6 25 40·8	13·8	— ·07	+ 3·0	,, 1 4 , — 6 : 12, 15, 30
,, 29·92866	0 55 4·13	8 59 6·1	13·6	+ ·28	+ ·4	,, 0 52 , — 9 : 96, 108, 110
Oct. 12·96017	0 46 14·88	11 14 25·5	13·8	+ ·02	+ ·1	Cambr. (Mass.) 156, 159, 167
Nov. 3·95014	0 34 35·20	13 31 30·3	14·0	+ ·02	·0	Tacub. 0^h32^m, — 14°: 117, 134, 150

1934 S B:

Date Gr. C.T.	α_{1925}	δ_{1925}	mag.	O—C in α	O—C in δ	Comparison stars
1934	h m s	° ′ ″		s	″	h m °
Sept. 29·79396	23 37 37·08	— 8 59 58·0	12·8	·00	·0	San Fern. 23 40 , — 9 : 1, 5, 10
Oct. 11·84222	27 5·28	7 20 47·0	13·0	·00	— ·1	,, 23 24 , — 7 : 83, 104, 107
,, 26·76543	21 8·58	4 49 14·1	13·5	+ ·47	+ ·9	,, 23 16 , — 5 : 145, 157, 161
Nov. 5·79013	22 6·60	2 55 8·1	13·9	·00	·0	,, 23 24 , — 3 : 23, 25, 36

1934 I M:

Date Gr. C.T.	α_{1925}	δ_{1925}	mag.	O—C in α	O—C in δ	Comparison stars
1934	h m s	° ′ ″		s	″	h m °
May 10·98171	16 39 14·97	—23 40 51·5	14·2	·00	·0	Hyd. 16 36 , — 23 : 63106, 63110, 63125
,, 22·00102	16 29 56·42	24 7 31·3	14·0	— ·05	+1·8	Cordoba 16 32 , — 24 : 781, 787, 794
June 2·74733	16 18 51·53	24 29 54·7	14·2	·00	·0	,, 16 16 , — 24 : 509, 522, 525
,, 13·79210	16 8 46·78	24 45 33·8	14·2	— ·01	·0	,, 16 4 , — 25 : 680, 714, 717

The ephemerides for the next opposition are:

1934 R V:

	α_{1925}		δ_{1925}	
	h m	m	° ′	′
1935 Dec. 16	7 32·8	— 6·1	+ 21 43	+ 13
24	7 26·7	7·0	21 56	14
1936 Jan. 1	7 19·7	7·4	22 10	13
9	7 12·3	7·2	22 23	12
17	7 5·1	6·6	22 35	10
25	6 58·5		22 45	

Oppos. Jan. 8 Mag. 15·1

1928 O C:

	α_{1925}		δ_{1925}	
	h m	m	° ′	′
1935 Nov. 14	4 48·0	— 6·4	+ 22 37	— 6
22	4 41·6	7·1	22 31	9
30	4 34·5	7·3	22 22	11
Dec. 8	4 27·2	6·9	22 11	11
16	4 20·3	6·2	22 0	11
24	4 14·1		21 49	

Oppos. Dec. 2 Mag. 13·8

1934 R W:

	α_{1925}		δ_{1925}	
	h m	m	° ′	′
1935 Nov. 30	6 22·8	— 6·2	+ 22 26	+ 10
Dec. 8	6 16·6	7·2	22 36	9
16	6 9·4	7·7	22 45	8
24	6 1·7	7·6	22 53	8
1936 Jan. 1	5 54·1	7·1	23 1	6
9	5 47·0		23 7	

Oppos. Dec. 23 Mag. 14·1

1934 R O:

	α_{1925}		δ_{1925}	
	h m	m	° ′	′
1935 Dec. 24	7 45·8	— 6·5	+ 18 43	+ 18
1936 Jan. 1	7 39·3	7·2	19 1	20
9	7 32·1	7·5	19 21	20
17	7 24·6	7·0	19 41	20
25	7 17·6	6·3	20 1	20
Feb. 2	7 11·3		20 20	19

Oppos. Jan. 12 Mag. 14·4

1934 R X:

		α_{1925}		δ_{1925}	
		h m	m	° ′	′
1936 Feb.	10	10 58·2	−5·6	+ 7 1	+ 76
	18	10 52·6	6·4	8 17	80
	26	10 46·2	6·4	9 37	78
March	5	10 39·8	6·1	10 55	72
	13	10 33·7	5·2	12 7	62
	21	10 28·5		13 9	

Oppos. Feb. 29 Mag. 14·1

1934 R Y:

		α_{1925}		δ_{1925}	
		h m	m	° ′	′
1936 Jan.	17	9 27·4	−6·6	+ 18 31	+ 53
	25	9 20·8	7·5	19 24	53
Feb.	2	9 13·3	7·6	20 17	50
	10	9 5·7	7·3	21 7	44
	18	8 58·4	6·5	21 51	36
	26	8 51·9		22 27	

Oppos. Feb. 5 Mag. 15·6

1934 R Z:

		α_{1925}		δ_{1925}	
		h m	m	° ′	′
1936 Jan.	1	8 35·0	−5·8	+ 32 26	+ 53
	9	8 29·2	7·6	33 19	49
	17	8 21·6	8·1	34 8	39
	25	8 13·5	7·9	34 47	26
Feb.	2	8 5·6	7·0	35 13	14
	10	7 58·6		35 27	

Oppos. Feb. 22 Mag. 13·7

1934 T F:

		α_{1925}		δ_{1925}	
		h m	m	° ′	′
1935 Dec.	16	7 45·4	−6·1	+ 35 20	+ 30
	24	7 39·3	7·3	35 50	24
1936 Jan.	1	7 32·0	7·9	36 14	16
	9	7 24·1	8·1	36 30	+ 6
	17	7 16·0	7·6	36 36	− 4
	25	7 8·4		36 32	

Oppos. Jan. 10 Mag. 13·3

1934 $R A_1$

		α_{1925}		δ_{1925}	
		h m	m	° ′	′
1935 Dec.	24	7 45·5	−5·8	+ 0 36	+ 19
1936 Jan.	1	7 39·7	6·6	0 55	31
	9	7 33·1	6·7	1 26	43
	17	7 26·4	6·5	2 9	52
	25	7 19·9	5·7	3 1	59
Feb.	2	7 14·2		4 0	

Oppos. Jan. 12 Mag. 14·5

1934 S B:

		α_{1925}		δ_{1925}	
		h m	m	° ′	′
1936 Feb.	10	11 15·5	−7·3	+ 15 50	+ 36
	18	11 8·2	8·3	16 26	33
	26	10 59·9	8·5	16 59	27
March	5	10 51·4	8·2	17 26	19
	13	10 43·2	7·6	17 45	10
	21	10 35·6		17 55	

Oppos. March 2 Mag. 16·0

1934 I M:

		α_{1925}		δ_{1925}	
		h m	m	° ′	′
1935 Aug.	26	0 5·2	−5·4	− 16 58	− 41
Sept.	3	23 59·8	6·2	17 39	36
	11	23 53·6	6·7	18 15	28
	19	23 46·9	6·6	18 43	18
	27	23 40·3	5·5	19 1	2
Oct.	5	23 34·8		19 3	

Oppos. Sept. 20 Mag. 14·3

1930 Q I:

		α_{1925}		δ_{1925}	
		h m	m	° ′	′
1936 Jan.	25	10 31·9	−6·1	+ 12 47	+ 29
Feb.	2	10 25·8	7·3	13 16	32
	10	10 18·5	8·0	13 48	33
	18	10 10·5	8·0	14 21	30
	26	10 2·5	7·5	14 51	25
March	5	9 55·0		15 16	

Oppos. Feb. 19 Mag. 15·0

Moreover the following new planets (with only one or more positions) have been found:

Planet	Mag.	Date Gr. C. T.	α_{1925}	δ_{1925}	Comparison stars
		1934	h m s	° ′ ″	
1934 IK	14·8	May 8·04410	19 8 2·72	− 15 21 17·7	Tacubaya 19^h8^m, −15°: 253, 284, 306
	14·5	,, 11·09425	19 8 37·00	− 15 18 58·0	,, 19^h8^m, −15°: 345, 385, 406
1934 IL	14·6	May 8·04410	19 3 24·79	− 22 25 42·6	Hyd. 19^h0^m, −23°: 76642, 76674, 76696
	14·4	,, 11·09425	19 3 32·43	− 22 41 30·0	,, 19^h0^m, −23°: 76730, 76776, 76777
1934 ND_1	15·5	July 1·75507	19 8 48·45	− 20 42 24·6	Hyd. 19^h8^m, −21°: 77366, 77408, 77412
1934 NE_1	13·5	July 1·75507	18 47 33·96	− 16 31 58·9	Tacubaya 18^h48^m, −16°: 285, 292, 321
	13·2	,, 2·79943	18 46 44·41	− 16 35 35·5	,, 18^h48^m, −16°: 148, 162, 207

Planet	Mag.	Date Gr. C. T.	α_{1925}	δ_{1925}	Comparison stars
		1934	h m s	° ′ ″	
1934 KA	13·2	May 10·93756	16 20 59·38	— 15 0 21·2	Tacubaya 16^h20^m, — 15°: 104, 130, 132
1934 IG	13·3	May 22·00102	16 44 47·35	— 18 53 58·6	Hyd. 16^h44^m, — 19°: 44647, 44654, 44678
	13·5	June 2·74733	16 32 29·17	— 20 36 6·7	,, 16^h32^m, — 20°: 52545, 52574, 52575
	13·5	,, 8·94270	16 25 43·59	— 21 30 35·4	,, 16^h28^m, — 21°: 64343, 64350, 64351
1934 LF	13·8	June 8·98685	17 5 15·32	— 20 23 33·9	Hyd. 17^h4^m, — 20°: 53884, 53889, 53941
1934 RB_1	14·0	Sept. 9·91056	23 45 24·27	— 5 0 7·4	San Fern. 23^h48^m, — 5°: 7, 160, 168
1934 SC	13·9	Sept. 29·88503	0 23 51·95	— 11 2 52·7	Cambr. (Mass.) 71, 86, 87
	14·0	Oct. 12·79344	0 12 31·58	— 11 25 59·3	,, 29, 43, 48
1934 SD	13·2	Sept. 29·92866	1 11 29·18	— 9 18 15·6	San Fern. 1^h8^m, — 9°: 97, 106, 110
1934 TN	13·1	Oct. 12·96017	1 0 39·68	— 9 42 32·3	San Fern. 1^h0^m, — 9°: 41, 42, 51
1934 VX	13·9	Nov. 3·99446	0 54 2·89	— 10 20 10·2	Cambr. (Mass.) 184, 189, 197
1934 VW	13·9	Nov. 3·95014	0 19 28·61	— 10 9 2·8	Cambr. (Mass.) 55, 57, 75
1934 VY	13·8	Nov. 3·95014	0 8 32·17	— 12 57 46·5	Cambr. (Mass.) 13, 23, 38

Prof. G. STRACKE informed me about these:

1934 L F has been discovered also by C. JACKSON on Juni 9 1934. Very probably it is identical with 710, Gertrud, discovered in 1911 and since lost.

1934 I G has been observed by C. JACKSON from May 13 till June 13 1934.

1934 K A has been observed by G. NEUJMIN on May 14 and S. AREND on May 17 1934.

The circular elements, computed by the method of Veithen, of three of these are:

Prov. designation	u	Ω	i	μ	a
	1934				
1934 IK	May 10·0 138°·68	142°·66	7°·83	0°·2527	2·478
1934 IL	May 10·0 179·90	87·62	18·90	0·2049	2·849
1934 NE_1	July 2·0 155·96	124·46	10·86	0·1716	3·207

Mean equinox and ecliptic 1925·0

Finally I have still computed the elements of the following two planets which appeared not to be new:

	222 Lucia	961 Gunnie	
g	m 9·0	m 10·6	
M_0	° 84·67448	° 44·51695	on Oct. 1·0 1934 Gr.C.T.
ω	177·78028	284·47403	} 1925·0
Ω	80·23937	26·79297	
i	2·16636	10·99665	
φ	7·29812	5·21698	
μ	″ 636·551	″ 802·836	
a	3·143 7507	2·693 1030	

The comparison of the positions, computed with these elements, with the observations is as follows:

222:

Date Gr.C.T.	α_{1925}	δ_{1925}	mag.	$O-C$ in α	$O-C$ in δ	Comparison stars
	h m s	° ′ ″		s	″	h m °
Sept. 9·91056	23 53 46·47	— 4 7 47·5	13·2	·00	+ ·1	San Fern. 23 52 , — 4 : 77, 84, 85
,, 15·81280	23 49 28·35	4 36 5·6	13·4	+ ·14	— ·4	,, 23 48 , — 5 : 47, 56, 81
,, 29·79396	23 39 16·61	5 38 48·3	12·8	·00	·0	,, 23 36 , — 6 : 70, 85, 88
Oct. 11·86404	23 31 40·41	6 20 48·1	13·5	— ·19	— ·3	,, 23 28 , — 6 : 107, 109, 118
,, 26·76543	23 25 24·71	6 48 39·9	13·4	·00	·0	,, 23 24 , — 7 : 51, 80, 81
Nov. 5·79013	23 23 36·14	6 50 48·9	13·4	— ·16	— ·1	,, 23 24 , — 7 : 21, 30, 45

961:

Date Gr.C.T.	α_{1925}	δ_{1925}	mag.	$O-C$ in α	$O-C$ in δ	Comparison stars
	h m s	° ′ ″		s	″	h m °
Sept. 9·97594	0 38 44·23	— 5 1 8·0	13·9	·00	·0	San Fern. 0 36 , — 5 : 74, 97, 107
,, 16·99048	0 32 42·75	5 15 15·1	13·5	— ·31	— ·4	,, 0 28 , — 5 : 120, 124, 129
,, 29·83863	0 20 24·55	5 36 13·4	13·6	+ ·06	+ 2·8	,, 0 16 , — 6 : 107, 119, 123
Oct. 12·83707	0 8 19·42	5 42 10·6	13·5	·00	·0	,, 0 8 , — 6 : 36, 44, 50
Nov. 6·82837	23 53 48·28	4 47 58·9	14·0	·00	·0	,, 23 56 , — 5 : 10, 22, 23

The following planets have been looked for in vain on these plates by Dr. VAN GENT: 228, 266, 294, 459, 548, 640, 710, 728, 810, 813, 961, 1003, 1004, 1008, 1012, 1029, 1052, 1120 and 1171.