The Low Terms in Mn V and Fe VI

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Most of the strong lines arising from transitions between the d^3 and d^24p configurations in Mn V and Fe VI have been classified. The presence of forbidden lines of these ions in nebulae and novae is discussed.

WHITE[1] has made a study of the isoelectronic sequence VIII, Cr IV and Mn V. In Mn V he identified transitions to the ^2G, ^2H and ^4F terms of the d^3 configuration but, since no intercombination lines were found, he was unable to fix the relative positions of the doublets and quartets. In the present analysis about 50 additional lines have been classified in Mn V and about 100 lines in Fe VI. In both cases these include intercombination lines. The classified lines are listed in Tables I and II and the terms deduced from them in Table III.

As practically nothing has been known about the relative positions of the low metastable states in the stages of ionization of these atoms between Mn II and Mn VI and Fe II and Fe VII it is of importance to determine whether any of the forbidden transitions between the terms, fixed in this analysis, correspond to observed lines in the nebulae or novae. A comparison with various spectra of these objects has yielded, in general, only an occasional chance coincidence due to the wide tolerance which is made necessary both by the large uncertainty of many of the astronomical wavelengths and by the low wave-number accuracy of extreme ultraviolet measurements. The only coincidences that may in any way be considered significant are those between $^4F_{3\frac{1}{2}}-{}^2G_{4\frac{1}{2}}$ at 4968.8A, $^4F_{3\frac{1}{2}}-{}^2G_{3\frac{1}{2}}$ at 5146.8A and $^4F_{4\frac{1}{2}}-{}^2G_{4\frac{1}{2}}$ at 5177.0A and the lines of Nova Pictoris[2] in 1931–1932 at 4968.1A, 5148.5A and 5176.3A.

TABLE I. *Classified lines of Mn V.*

INT.	λ		ν	CLASSIFICATION d^3	CLASSIFICATION d^24p	INT.	λ	ν	CLASSIFICATION d^3	CLASSIFICATION d^24p	INT.	λ	ν	CLASSIFICATION d^3	CLASSIFICATION d^24p
1	382.061		261738	$^4F_{3\frac{1}{2}}$	$-(^3P)\,^4D_{3\frac{1}{2}}$	7	406.417	246053	$^4F_{3\frac{1}{2}}$	$-(^3F)\,^4D_{2\frac{1}{2}}$	8	415.980	240396	$^4P_{2\frac{1}{2}}$	$-(^3P)\,^4S$
6	382.907	•	261160	$^4F_{4\frac{1}{2}}$	$-(^3P)\,^4D_{3\frac{1}{2}}$	6	406.845	245794	$^4F_{2\frac{1}{2}}$	$-(^3F)\,^4D_{1\frac{1}{2}}$				$^2H_{5\frac{1}{2}}$	$-(^1G)\,^2G_{4\frac{1}{2}}$
1	382.980		261110	$^4F_{2\frac{1}{2}}$	$-(^3P)\,^4D_{2\frac{1}{2}}$	2	407.301	245519	$^4P_{2\frac{1}{2}}$	$-(^3P)\,^4D_{3\frac{1}{2}}$	1	422.228	236839	A	$-(^3P)\,^4D_{2\frac{1}{2}}$
2	383.422		260809	$^4F_{1\frac{1}{2}}$	$-(^3P)\,^4D_{1\frac{1}{2}}$	6	408.322	244905	$^4F_{4\frac{1}{2}}$	$-(^3F)\,^2F_{3\frac{1}{2}}$	5	428.600*	233318	$^2G_{4\frac{1}{2}}$	$-(^3F)\,^2G_{4\frac{1}{2}}$
4	383.681		260633	$^4F_{3\frac{1}{2}}$	$-(^3P)\,^4D_{2\frac{1}{2}}$	1	408.390	244864	$^4P_{1\frac{1}{2}}$	$-(^3P)\,^4D_{2\frac{1}{2}}$	5	429.054*	233071	$^2G_{3\frac{1}{2}}$	$-(^3F)\,^2G_{3\frac{1}{2}}$
5	383.939		260458	$^4F_{2\frac{1}{2}}$	$-(^3P)\,^4D_{1\frac{1}{2}}$	4	408.733	244658	$^4F_{3\frac{1}{2}}$	$-(^3F)\,^2F_{2\frac{1}{2}}$	1	429.984	232567	$^2G_{4\frac{1}{2}}$	$-(^3F)\,^2G_{3\frac{1}{2}}$
3	393.324		254243	$^2G_{4\frac{1}{2}}$	$-(^1G)\,^2H_{5\frac{1}{2}}$	1	409.217	244369	$^4P_{\frac{1}{2}}$	$-(^3P)\,^4D_{1\frac{1}{2}}$	0	431.973	231496	$^4P_{1\frac{1}{2}}$	$-(^3F)\,^2D_{2\frac{1}{2}}$
1	394.322		253600	$^2G_{3\frac{1}{2}}$	$-(^1G)\,^2H_{4\frac{1}{2}}$	2	409.335*	244299	$^4P_{3\frac{1}{2}}$	$-(^3F)\,^4F_{4\frac{1}{2}}$	7	433.558	230650	$^4P_{2\frac{1}{2}}$	$-(^3F)\,^4D_{3\frac{1}{2}}$
2	398.604		250876	$^4F_{3\frac{1}{2}}$	$-(^3F)\,^2G_{4\frac{1}{2}}$	3	409.546	244173	$^2G_{4\frac{1}{2}}$	$-(^3P)\,^4D_{3\frac{1}{2}}$	3	434.210	230303	$^4P_{1\frac{1}{2}}$	$-(^3F)\,^4D_{2\frac{1}{2}}$
4	399.538		250289	$^4F_{4\frac{1}{2}}$	$-(^3F)\,^2G_{4\frac{1}{2}}$	4	409.795*	244024	$^4F_{2\frac{1}{2}}$	$-(^3F)\,^4F_{3\frac{1}{2}}$	0	434.403	230201	$^2G_{3\frac{1}{2}}$	$-(^3F)\,^2D_{2\frac{1}{2}}$
3	401.787		248888	$^4P_{1\frac{1}{2}}$	$-(^3P)\,^4P_{2\frac{1}{2}}$	8	410.311*	243718	$^4F_{4\frac{1}{2}}$	$-(^3F)\,^4F_{4\frac{1}{2}}$	2	434.575	230110	$^4P_{\frac{1}{2}}$	$-(^3F)\,^4D_{\frac{1}{2}}$
4	402.525		248432	$^4P_{2\frac{1}{2}}$	$-(^3P)\,^4P_{2\frac{1}{2}}$	5	410.459*	243630	$^4F_{4\frac{1}{2}}$	$-(^3F)\,^4G_{5\frac{1}{2}}$	2	435.069	229849	$^4P_{2\frac{1}{2}}$	$-(^3F)\,^4D_{2\frac{1}{2}}$
3	402.754		248291	$^4P_{\frac{1}{2}}$	$-(^3P)\,^4P_{1\frac{1}{2}}$				$^4F_{1\frac{1}{2}}$	$-(^3F)\,^4F_{2\frac{1}{2}}$	1	435.291	229731	$^4P_{\frac{1}{2}}$	$-(^3F)\,^4D_{1\frac{1}{2}}$
0	403.007		248135	$^4P_{1\frac{1}{2}}$	$-(^3P)\,^4P_{1\frac{1}{2}}$	8	410.611*	243540	$^4F_{3\frac{1}{2}}$	$-(^3F)\,^4F_{3\frac{1}{2}}$	1	435.594	229572	$^4P_{1\frac{1}{2}}$	$-(^3F)\,^4D_{1\frac{1}{2}}$
0	403.281		247966	$^4P_{\frac{1}{2}}$	$-(^3P)\,^4P_{\frac{1}{2}}$	8	410.990*	243315	$^4F_{2\frac{1}{2}}$	$-(^3F)\,^4F_{2\frac{1}{2}}$	2	436.093	229309	$^2G_{4\frac{1}{2}}$	$-(^3F)\,^4D_{3\frac{1}{2}}$
3	403.552		247800	$^4P_{1\frac{1}{2}}$	$-(^3P)\,^4P_{\frac{1}{2}}$	7	411.329*	243114	$^4F_{1\frac{1}{2}}$	$-(^3F)\,^4F_{1\frac{1}{2}}$	8	436.174	229266	$^4P_{2\frac{1}{2}}$	$-(^3F)\,^2F_{3\frac{1}{2}}$
1	403.680		247721	$^4F_{2\frac{1}{2}}$	$-(^3F)\,^2D_{2\frac{1}{2}}$	7	411.585*	242963	$^4F_{4\frac{1}{2}}$	$-(^3F)\,^4F_{3\frac{1}{2}}$	1	436.660	229011	$^2G_{3\frac{1}{2}}$	$-(^3F)\,^4D_{2\frac{1}{2}}$
4	403.754		247676	$^4P_{2\frac{1}{2}}$	$-(^3P)\,^4P_{1\frac{1}{2}}$				$^4F_{3\frac{1}{2}}$	$-(^3F)\,^4G_{4\frac{1}{2}}$	1	436.857	228908	$^4P_{1\frac{1}{2}}$	$-(^3F)\,^2F_{2\frac{1}{2}}$
				$^2G_{3\frac{1}{2}}$	$-(^1G)\,^2G_{3\frac{1}{2}}$	3	411.789*	242843	$^4F_{3\frac{1}{2}}$	$-(^3F)\,^4F_{2\frac{1}{2}}$	5	438.735*	227928	$^2G_{4\frac{1}{2}}$	$-(^3F)\,^2F_{3\frac{1}{2}}$
8	404.358		247306	$^2G_{4\frac{1}{2}}$	$-(^1G)\,^2G_{4\frac{1}{2}}$	3	411.920*	242766	$^4F_{2\frac{1}{2}}$	$-(^3F)\,^4F_{1\frac{1}{2}}$	5	439.352*	227608	$^2G_{3\frac{1}{2}}$	$-(^3F)\,^2F_{2\frac{1}{2}}$
				$^2H_{5\frac{1}{2}}$	$-(^1G)\,^2H_{5\frac{1}{2}}$	5	412.534*	242404	$^4F_{2\frac{1}{2}}$	$-(^3F)\,^4G_{3\frac{1}{2}}$	1	441.008	226753	$^2H_{4\frac{1}{2}}$	$-(^3F)\,^2G_{4\frac{1}{2}}$
4	404.455		247246	$^4F_{3\frac{1}{2}}$	$-(^3F)\,^2D_{2\frac{1}{2}}$	4	413.384*	241906	$^4F_{1\frac{1}{2}}$	$-(^3F)\,^4G_{2\frac{1}{2}}$	7	441.725*	226385	$^2H_{5\frac{1}{2}}$	$-(^3F)\,^2G_{4\frac{1}{2}}$
5	405.094*		246856	$^4F_{3\frac{1}{2}}$	$-(^3F)\,^4D_{3\frac{1}{2}}$	3	414.933	241003	$^4P_{\frac{1}{2}}$	$-(^3P)\,^4S$	7	442.495*	225991	$^2H_{4\frac{1}{2}}$	$-(^3F)\,^2G_{3\frac{1}{2}}$
8	405.654		246516	$^4F_{1\frac{1}{2}}$	$-(^3F)\,^4D_{\frac{1}{2}}$	5	415.207	240844	$^4P_{1\frac{1}{2}}$	$-(^3P)\,^4S$	4	447.498	223465	A	$-(^3F)\,^2D_{2\frac{1}{2}}$
				$^2H_{4\frac{1}{2}}$	$-(^1G)\,^2H_{4\frac{1}{2}}$	0	415.336	240769	$^2H_{4\frac{1}{2}}$	$-(^1G)\,^2G_{4\frac{1}{2}}$	3	448.262	223084	A	$-(^3F)\,^4D_{3\frac{1}{2}}$
7	406.037*		246283	$^4F_{4\frac{1}{2}}$	$-(^3F)\,^4D_{3\frac{1}{2}}$	7	415.622	240603	$^4H_{4\frac{1}{2}}$	$-(^1G)\,^2G_{3\frac{1}{2}}$	3	451.065	221698	A	$-(^3F)\,^2F_{3\frac{1}{2}}$
1	406.240		246160	$^4F_{1\frac{1}{2}}$	$-(^3F)\,^4D_{1\frac{1}{2}}$						2	452.758	220869	A	$-(^3F)\,^2F_{2\frac{1}{2}}$

* Classified by White, (reference 1).

[1] H. E. White, Phys. Rev. **33**, 672 (1929).

[2] H. Spencer Jones, M. N. R. A. S. **92**, 728 (1932).

TABLE II. *Classified lines in Fe VI.*

INT.	λ	ν	CLASSIFICATION d^3	CLASSIFICATION d^24p
3	276.947	361080	$^4F_{3\frac{1}{2}}$	$-(^3P)^4D_{3\frac{1}{2}}$
6	277.569	360271	$^4F_{4\frac{1}{2}}$	$-(^3P)^4D_{3\frac{1}{2}}$
2	277.610	360218	$^4F_{2\frac{1}{2}}$	$-(^3P)^4D_{2\frac{1}{2}}$
3	277.951	359776	$^4F_{1\frac{1}{2}}$	$-(^3P)^4D_{1\frac{1}{2}}$
5	278.149	359520	$^4F_{3\frac{1}{2}}$	$-(^3P)^4D_{2\frac{1}{2}}$
5	278.339	359274	$^4F_{2\frac{1}{2}}$	$-(^3P)^4D_{1\frac{1}{2}}$
3	278.471	359104	$^4F_{1\frac{1}{2}}$	$-(^3P)^4D_{\frac{1}{2}}$
5	283.770	352398	$^2G_{4\frac{1}{2}}$	$-(^1G)^2H_{5\frac{1}{2}}$
4	284.504	351489	$^2G_{3\frac{1}{2}}$	$-(^1G)^2H_{4\frac{1}{2}}$
1	287.333	348028	$^4F_{4\frac{1}{2}}$	$-(^3F)^2G_{4\frac{1}{2}}$
4	288.551	346559	$^4P_{1\frac{1}{2}}$	$-(^3P)^4P_{2\frac{1}{2}}$
5	289.112	345887	$^4P_{2\frac{1}{2}}$	$-(^3P)^4P_{2\frac{1}{2}}$
4	289.302	345660	$^4P_{\frac{1}{2}}$	$-(^3P)^4P_{1\frac{1}{2}}$
3	289.468	345462	$^4P_{1\frac{1}{2}}$	$-(^3P)^4P_{1\frac{1}{2}}$
4	289.520	345400	$^4F_{2\frac{1}{2}}$	$-(^3F)^2D_{2\frac{1}{2}}$
2	289.672	345218	$^4P_{\frac{1}{2}}$	$-(^3P)^4P_{\frac{1}{2}}$
4	289.851	345005	$^4P_{1\frac{1}{2}}$	$-(^3P)^4P_{1\frac{1}{2}}$
4	290.038	344782	$^4P_{2\frac{1}{2}}$	$-(^3P)^4P_{1\frac{1}{2}}$
4	290.089	344722	$^4F_{3\frac{1}{2}}$	$-(^3F)^2D_{2\frac{1}{2}}$
4	290.146	344654	$^4F_{1\frac{1}{2}}$	$-(^3F)^2D_{1\frac{1}{2}}$
6	290.271	344506	$^2H_{5\frac{1}{2}}$	$-(^1G)^2H_{5\frac{1}{2}}$
5	290.302	344469	$^2G_{3\frac{1}{2}}$	$-(^1G)^2G_{3\frac{1}{2}}$
2	290.499	344235	$^4F_{3\frac{1}{2}}$	$-(^3F)^4D_{3\frac{1}{2}}$
4	290.577	344143	$^4F_{2\frac{1}{2}}$	$-(^3F)^2D_{1\frac{1}{2}}$
4	290.737	343953	$^2G_{4\frac{1}{2}}$	$-(^1G)^2G_{4\frac{1}{2}}$
2	290.890	343773	$^4F_{2\frac{1}{2}}$	$-(^3F)^4D_{2\frac{1}{2}}$
			$^2G_{4\frac{1}{2}}$	$-(^1G)^2G_{3\frac{1}{2}}$
5	291.020	343619	$^4F_{1\frac{1}{2}}$	$-(^3F)^4D_{\frac{1}{2}}$
6	291.184	343425	$^4F_{4\frac{1}{2}}$	$-(^3F)^4D_{3\frac{1}{2}}$
6	291.229	343372	$^2H_{4\frac{1}{2}}$	$-(^1G)^2H_{4\frac{1}{2}}$
5	291.473	343085	$^4F_{3\frac{1}{2}}$	$-(^3F)^4D_{2\frac{1}{2}}$
2	291.632	342898	$^2H_{5\frac{1}{2}}$	$-(^1G)^2H_{4\frac{1}{2}}$
5	291.800	342700	$^4F_{3\frac{1}{2}}$	$-(^3F)^4D_{1\frac{1}{2}}$
5	291.829	342666	$^4P_{2\frac{1}{2}}$	$-(^3P)^4D_{3\frac{1}{2}}$
0	291.931	342547	$^4F_{1\frac{1}{2}}$	$-(^3F)^2F_{2\frac{1}{2}}$
2	292.038	342421	$^4F_{3\frac{1}{2}}$	$-(^3F)^2F_{3\frac{1}{2}}$
1	292.343	342064	$^4F_{2\frac{1}{2}}$	$-(^3F)^2F_{2\frac{1}{2}}$
4	292.597	341767	$^4P_{1\frac{1}{2}}$	$-(^3P)^4D_{2\frac{1}{2}}$
7	292.736	341605	$^4F_{4\frac{1}{2}}$	$-(^3F)^2F_{3\frac{1}{2}}$
5	292.925	341384	$^4F_{3\frac{1}{2}}$	$-(^3F)^2F_{2\frac{1}{2}}$
2	293.046	341244	$^4F_{3\frac{1}{2}}$	$-(^3F)^4F_{4\frac{1}{2}}$
1	293.214	341048	$^4P_{\frac{1}{2}}$	$-(^3P)^4D_{1\frac{1}{2}}$
4	293.292	340957	$^2G_{4\frac{1}{2}}$	$-(^3P)^4D_{3\frac{1}{2}}$
4	293.384	340850	$^4F_{2\frac{1}{2}}$	$-(^3F)^4F_{3\frac{1}{2}}$
4	293.488	340729	$^4F_{4\frac{1}{2}}$	$-(^3F)^4G_{5\frac{1}{2}}$
8	293.745	340431	$^4F_{4\frac{1}{2}}$	$-(^3F)^4F_{4\frac{1}{2}}$
1	293.820	340345	$^4F_{1\frac{1}{2}}$	$-(^3F)^4F_{2\frac{1}{2}}$
8	293.966	340175	$^4F_{3\frac{1}{2}}$	$-(^3F)^4F_{3\frac{1}{2}}$
0	294.040	340090	$^2G_{3\frac{1}{2}}$	$-(^3P)^4D_{2\frac{1}{2}}$
7	294.265	339830	$^4F_{2\frac{1}{2}}$	$-(^3F)^4F_{2\frac{1}{2}}$
5	294.339	339744	$^4F_{3\frac{1}{2}}$	$-(^3F)^4G_{4\frac{1}{2}}$
7	294.520	339536	$^4F_{1\frac{1}{2}}$	$-(^3F)^4F_{1\frac{1}{2}}$
4	294.665	339368	$^4F_{4\frac{1}{2}}$	$-(^3F)^4F_{3\frac{1}{2}}$
4	294.850	339155	$^4F_{3\frac{1}{2}}$	$-(^3F)^4F_{2\frac{1}{2}}$
4	294.960	339029	$^4F_{2\frac{1}{2}}$	$-(^3F)^4F_{1\frac{1}{2}}$
4	295.014	338967	$^4F_{2\frac{1}{2}}$	$-(^3F)^4G_{3\frac{1}{2}}$
2	295.042	338935	$^4F_{4\frac{1}{2}}$	$-(^3F)^4G_{4\frac{1}{2}}$
4	295.634	338256	$^4F_{1\frac{1}{2}}$	$-(^3F)^4G_{2\frac{1}{2}}$
			$^4F_{3\frac{1}{2}}$	$-(^3F)^4G_{3\frac{1}{2}}$
1	296.317	337477	$^4F_{4\frac{1}{2}}$	$-(^3F)^4G_{3\frac{1}{2}}$
3	296.723	337015	A	$-(^3P)^4P_{2\frac{1}{2}}$
5	296.808	336918	$^4P_{\frac{1}{2}}$	$-(^3P)^4S$
6	296.988	336714	$^4P_{1\frac{1}{2}}$	$-(^3P)^4S$
2	297.131	336552	$^2H_{4\frac{1}{2}}$	$-(^1G)^2G_{4\frac{1}{2}}$
7	297.308	336352	$^2H_{4\frac{1}{2}}$	$-(^1G)^2G_{3\frac{1}{2}}$
8d	297.568	336058	$^2H_{5\frac{1}{2}}$	$-(^1G)^2G_{4\frac{1}{2}}$
			$^4P_{2\frac{1}{2}}$	$-(^3P)^4S$
1	299.579	333802	A	$-(^3P)^4D_{3\frac{1}{2}}$
1	299.803	333552	$^2H_{4\frac{1}{2}}$	$-(^3P)^4D_{3\frac{1}{2}}$
2	300.997	332229	A	$-(^3P)^4D_{2\frac{1}{2}}$
4	303.558	329426	$^2G_{3\frac{1}{2}}$	$-(^3F)^2G_{4\frac{1}{2}}$
7	304.221	328708	$^2G_{4\frac{1}{2}}$	$-(^3F)^2G_{4\frac{1}{2}}$
7	304.551	328352	$^2G_{3\frac{1}{2}}$	$-(^3F)^2G_{3\frac{1}{2}}$
4	305.200	327654	$^2G_{4\frac{1}{2}}$	$-(^3F)^2G_{3\frac{1}{2}}$
1	305.837	326972	$^4P_{1\frac{1}{2}}$	$-(^3F)^2D_{2\frac{1}{2}}$
1	306.460	326307	$^4P_{2\frac{1}{2}}$	$-(^3F)^2D_{2\frac{1}{2}}$
2	306.823	325921	$^4P_{\frac{1}{2}}$	$-(^3F)^2D_{1\frac{1}{2}}$
5	306.922	325816	$^4P_{2\frac{1}{2}}$	$-(^3F)^4D_{3\frac{1}{2}}$
2	307.013	325719	$^4P_{1\frac{1}{2}}$	$-(^3F)^2D_{1\frac{1}{2}}$
4	307.375	325336	$^4P_{1\frac{1}{2}}$	$-(^3F)^4D_{2\frac{1}{2}}$
3	307.404	325305	$^2G_{3\frac{1}{2}}$	$-(^3F)^2D_{2\frac{1}{2}}$
3	307.800	324886	$^4P_{\frac{1}{2}}$	$-(^3F)^4D_{\frac{1}{2}}$
0	307.884	324798	$^2G_{3\frac{1}{2}}$	$-(^3F)^4D_{3\frac{1}{2}}$
3	308.007	324668	$^4P_{1\frac{1}{2}}$	$-(^3F)^4D_{\frac{1}{2}}$
			$^4P_{2\frac{1}{2}}$	$-(^3F)^4D_{2\frac{1}{2}}$
2	308.187	324478	$^4P_{\frac{1}{2}}$	$-(^3F)^4D_{1\frac{1}{2}}$
2	308.383	324272	$^4P_{1\frac{1}{2}}$	$-(^3F)^4D_{1\frac{1}{2}}$
4	308.534	324113	$^2G_{4\frac{1}{2}}$	$-(^3F)^4D_{3\frac{1}{2}}$
5	308.644	323998	$^4P_{2\frac{1}{2}}$	$-(^3F)^2F_{3\frac{1}{2}}$
3	308.960	323666	$^2G_{3\frac{1}{2}}$	$-(^3F)^4D_{2\frac{1}{2}}$
3	308.993	323632	$^4P_{1\frac{1}{2}}$	$-(^3F)^2F_{2\frac{1}{2}}$
1	309.627	322969	$^4P_{2\frac{1}{2}}$	$-(^3F)^2F_{2\frac{1}{2}}$
			$^2G_{3\frac{1}{2}}$	$-(^3F)^2F_{3\frac{1}{2}}$
5	310.274	322296	$^2G_{4\frac{1}{2}}$	$-(^3F)^2F_{3\frac{1}{2}}$
4	310.601	321956	$^2G_{3\frac{1}{2}}$	$-(^3F)^2F_{2\frac{1}{2}}$
0	310.807	321743	$^4P_{2\frac{1}{2}}$	$-(^3F)^4F_{3\frac{1}{2}}$
1	311.138	321401	$^4P_{1\frac{1}{2}}$	$-(^3F)^4F_{2\frac{1}{2}}$
2	311.236	321300	$^2H_{4\frac{1}{2}}$	$-(^3F)^2G_{4\frac{1}{2}}$
7	311.702	320819	$^2H_{5\frac{1}{2}}$	$-(^3F)^2G_{4\frac{1}{2}}$
7	312.263	320243	$^2H_{4\frac{1}{2}}$	$-(^3F)^2G_{3\frac{1}{2}}$
3	314.299	318168	$^2G_{4\frac{1}{2}}$	$-(^3F)^4G_{3\frac{1}{2}}$
1	314.814	317648	$^2G_{3\frac{1}{2}}$	$-(^3F)^4G_{2\frac{1}{2}}$
4	315.027	317433	A	$-(^3F)^2D_{2\frac{1}{2}}$
3	315.506	316951	A	$-(^3F)^4D_{3\frac{1}{2}}$
3	317.319	315140	A	$-(^3F)^2F_{3\frac{1}{2}}$
3	318.364	314106	A	$-(^3F)^2F_{2\frac{1}{2}}$

TABLE III. *Term values of Mn V and Fe VI.*

d^3	Mn V	Fe VI
$^4F_{1\frac{1}{2}}$	000	000
$^4F_{2\frac{1}{2}}$	349	510
$^4F_{3\frac{1}{2}}$	827	1185
$^4F_{4\frac{1}{2}}$	1406	1994
$^4P_{\frac{1}{2}}$	16420	18734
$^4P_{1\frac{1}{2}}$	16580	18937
$^4P_{2\frac{1}{2}}$	17036	19601
$^2G_{3\frac{1}{2}}$	17878	20609
$^2G_{4\frac{1}{2}}$	18382	21305
A	24610	28469
$^2H_{4\frac{1}{2}}$	24953	28723
$^2H_{5\frac{1}{2}}$	25315	29196

d^24p	Mn V	Fe VI
$(^3F)^2G_{2\frac{1}{2}}$	241906	338256
$(^3F)^4G_{3\frac{1}{2}}$	242753	339477
$(^3F)^4F_{1\frac{1}{2}}$	243115	339538
$(^3F)^4F_{2\frac{1}{2}}$	243667	340341
$(^3F)^4G_{4\frac{1}{2}}$	243790	340929
$(^3F)^4F_{3\frac{1}{2}}$	244370	341361
$(^3F)^4G_{5\frac{1}{2}}$	245036	342723
$(^3F)^4F_{4\frac{1}{2}}$	245125	342426
$(^3F)^2F_{2\frac{1}{2}}$	245486	342570
$(^3F)^4D_{1\frac{1}{2}}$	246143	343210
$(^3F)^2F_{3\frac{1}{2}}$	246307	343600
$(^3F)^4D_{\frac{1}{2}}$	246530	343619
$(^3F)^4D_{2\frac{1}{2}}$	246880	344270
$(^3F)^2D_{1\frac{1}{2}}$		344656
$(^3F)^4D_{3\frac{1}{2}}$	247686	345419

d^24p	Mn V	Fe VI
$(^3F)^2D_{2\frac{1}{2}}$	248074	345908
$(^3F)^2G_{3\frac{1}{2}}$	250949	348962
$(^3F)^2G_{4\frac{1}{2}}$	251700	350016
$(^3P)^4S$	257424	355652
$(^3P)^4D_{\frac{1}{2}}$		359104
$(^3P)^4D_{1\frac{1}{2}}$	260808	359784
$(^3P)^4D_{2\frac{1}{2}}$	261460	360705
$(^3P)^4D_{3\frac{1}{2}}$	262566	362265
$(^3P)^4P_{\frac{1}{2}}$	264382	363944
$(^3P)^4P_{1\frac{1}{2}}$	264712	364390
$(^3P)^4P_{2\frac{1}{2}}$	265468	365492
$(^1G)^2G_{3\frac{1}{2}}$	265555	365077
$(^1G)^2G_{4\frac{1}{2}}$	265715	365262
$(^1G)^2H_{4\frac{1}{2}}$	271475	372096
$(^1G)^2H_{5\frac{1}{2}}$	272624	373702