

ABSORPTION SPECTRUM OF IRON IN THE
VACUUM ULTRAVIOLET 2950 - 1588 Å

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By

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I. INTRODUCTION

The vacuum ultraviolet region has become increasingly important with the use of rockets and artificial satellites to obtain spectra of radiations from astrophysical sources. These spectra are simulated by the absorption spectra obtained from the shock excitation of powdered materials.³ At the Shock Tube Spectroscopy Laboratory of the Harvard College Observatory, atomic absorption spectrograms of different elements in this region are now available for analysis and interpretation. An intensive study of the absorption spectrograms of iron has been made. The resonance lines of Fe I predominate in the region above 1855 Å and many Fe II lines are observed. Although the temperature of the shock tube was thought not to be sufficiently high to produce Fe III absorption lines, a number of the observed lines agreed closely with the accepted values of Fe III emission lines. Positive identification of these lines and many newly observed lines below

1855 Å awaits an extension of the analysis of the iron spectrum which is now in progress. These four factors, the predominance of the resonance lines of Fe I, many Fe II lines, the possibility of Fe III lines and many new lines below 2000 Å, produce spectrograms which differ in appearance from the emission spectrograms of the iron arc and spark. An atlas of these absorption spectrograms should prove to be a necessary and timely tool.

II. EXPERIMENTAL

All plates except one taken with the furnace at Imperial College, London⁴ are from the Shock Tube Spectroscopy Laboratory of the Harvard College Observatory. Table 1 is the index of the plates measured. The iron compound excited by the shock is given for each plate. The spectroscopy of shock-excited solids is described in a number of the references listed. The vacuum spectrograph used is of the Eagle type with a three meter concave grating. The plates had an average

dispersion of approximately 2.76 \AA/mm . The dispersion was not constant, but varied linearly.

All plates were measured on a Zeiss Abbe Comparator and several on the Grant Comparator at the Argonne National Laboratory. These measurements were converted into wavelengths in vacuum by a computer program developed by J.L. Tech⁵ and those above 2000 \AA were changed into wavelengths in air. This computer program used a large number of standards, tested different degree equations for the plate, calculated the dispersion at each standard wavelength, selected the tolerance, eliminated the standards incorrectly identified or poorly measured and calculated the standard deviation and probable error. This program was applied to the measurements of each plate, considering each plate as a single region as well as dividing each plate into two or more regions.

Table 2 lists the regions measured, the number of standards used in each region, the tolerance, standard deviation and probable error for each region. The letter following the plate number indicates whether the measurements were made on the Grant Comparator (A) at the Argonne National Laboratory

or on the Zeiss Comparator (Z) at the Harvard College Observatory. For the regions above 2000 \AA , there are 29 separate entries in Table 2. Since one micron corresponds to $.003 \text{ \AA}$, 11 of the 29 entries have a probable error in measurement of one micron and seven a probable error in measurement greater than two microns.

III. PLAN OF THE ATLAS

The region contained in the Atlas is $2950 - 1588 \text{ \AA}$. There are nine charts, each print containing approximately 100 \AA . The light spectral lines on plates 93 and 94 are copper emission lines excited by a hollow cathode. Because of experimental difficulties, it was not possible to use the copper lines as standards for measurement. Therefore, internal Fe I standards were used above 1855 \AA . Below 1855 \AA , Fe I Ritz (identified as RZ under Remarks) and Fe II standards were used. Lines used as standards are marked with an

asterisk. These spectrograms were enlarged almost sixfold so that the dispersion of the charts is about $.483 \text{ \AA/mm}$. Below 2000 \AA , the charts contain three exposures for each region. Faint lines are brought out in one exposure, and the structure of the strong lines in a different exposure. It is this region below 2000 \AA that contains many new lines.

IV. WAVELENGTH DATA

Table 3 lists the lines observed and measured on the plates indexed in Table 1. The wavelength in vacuum is given in column one, the wavelength in air in column two. Under "Remarks" is given the value of the corresponding emission line reported in the literature and its reference. Above 2000 \AA these values are in air, below 2000 \AA they are in vacuum. The reference RM-U designates an unclassified strong iron line given in the text but not included in the table of classified lines given in RM. In some instances,

the wavelength values are followed by "C" to indicate that these values were obtained from Schumacher (ref. "S", table 3) but were corrected by C.M. Sitterly to agree with measurements of K. Burns and F.M. Walters. When several values appeared in the literature, the one which agreed more closely with the Harvard measurements was chosen. Column four gives the wavenumber, columns five, six and seven the number of plates on which the line was observed, the number of measurements, and the span of measurements, namely $\Delta \lambda \times 10^3 \text{ \AA}$.

Lines with only one measurement, as well as all lines below 1750 \AA are given to two decimal places. From $2950 - 1855 \text{ \AA}$ where the span was greater than $.025$, and from $1855 - 1750 \text{ \AA}$ where the span was greater than $.01 \text{ \AA}$, the wavelengths of the lines are also given to two decimal places.

All lines observed below 1750 \AA have been retained in this list, although it is probable that many are not due to iron. The wavelength and probable element are given under "Remarks". It is expected that as the present analysis progresses, many of the new lines will coincide with those predicted from new term values and thus be identified as iron.

V. SUMMARY

An analysis of the differences between the Harvard wavelengths and the literature values is given in Table 4. In the region 2950^I - 2084 Å the wavelengths used for standards were values from Reference A; from 2084^{II} - 1855 Å, Fe I wavelengths listed in Reference RM; and, in the region 1855^{III} - 1751 Å, Fe I Ritz standards and lines that were identified as Fe II. A little more than a third of the large number of lines in region one had a difference equal to or less than .003 Å, which means a variation in measurement of one micron. A little less than one third of the lines in this region had a difference greater than 0.01 Å. The other two regions differ slightly from region one. In region one, only 15 lines, or less than two per cent, had a difference greater than 0.05 Å. The other regions had none.

Strong, hazy, wide, faint and blended lines were difficult to measure with high precision. The experimental conditions of the plates differed.

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References for Table 3

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TABLE 1.

Index of Plates

Plate No.	Center of Plate (Å)	Region (Å)	Material
86	2750	2450 - 3050	Fe (CO) ₅
87	2250	1950 - 2550	Fe (CO) ₅
90	1750	1450 - 2050	Fe (CO) ₅
91	1750	1450 - 2050	Fe (CO) ₅
* 93	2250	1950 - 2550	Fe (CO) ₅
* 94	2750	2450 - 3050	Fe (CO) ₅
S19	1750	1450 - 2050	Fe ₃ O ₄
* 101	1750	1450 - 2050	Fe Cl ₃
Fu	2000	1700 - 2300	

* Prints of these plates were used for the charts.

TABLE 2.

Plate No.	Region (Å)	Number of Standards	Standard Deviation	Probable Error
86A	3068 - 2712	55	67	45
86Z	3003 - 2712	44	34	23
94A	3030 - 2712	34	18	12
94Z	3003 - 2712	34	62	42
86A	2721 - 2444	39	100	68
86Z	2745 - 2473	50	105	71
94A	2715 - 2438	57	36	24
94Z	2745 - 2468	57	39	26
93A	2585 - 2375	31	151	02
93Z	2529 - 2438	24	112	75
93A	2469 - 2287	21	61	41
93Z	2469 - 2287	22	45	30
93A	2438 - 2246	26	74	50
93Z	2321 - 2187	27	47	31
93A	2252 - 2084	36	75	50
93Z	2231 - 2084	35	41	28
87A	2536 - 2299	24	157	106
87A	2469 - 2287	21	90	61

TABLE 2. (continued)

Plate No.	Region (A)	Number of Standards	Standard Deviation	Probable Error
87Z	2469 - 2287	21	63	43
87A	2302 - 2158	24	37	25
87Z	2321 - 2187	26	43	29
87A	2159 - 2084	19	43	29
87Z	2231 - 2084	31	35	23
FuA	2375 - 2269	21	71	48
FuA	2271 - 2162	21	65	44
FuA	2164 - 2084	23	53	36
93Z	2084 - 1974	43	78	52
90Z	2064 - 1855	47	171	116
101Z	2017 - 1950	25	142	96
FuA	1974 - 1855	36	111	75
FuZ	1974 - 1855	35	122	82
S19A	1974 - 1855	31	101	68
S19Z	1974 - 1855	39	152	103
91A	1974 - 1855	32	135	91
90Z	1974 - 1855	39	159	107
101Z	1974 - 1855	39	102	69

TABLE 2. (continued)

Plate No.	Region (Å)	Number of Standards	Standard Deviation	Probable Error
FuA	1903 - 1752	29	179	121
FuZ	1876 - 1751	24	113	76
S19Z	1974 - 1768	44	153	104
101Z	1876 - 1751	17	81	55
101Z	1764 - 1588	17	216	146
S19Z	1764 - 1623	15	650	438

TABLE 3 - CONTINUED

WAVELENGTH		REMARKS	WAVENUMBER	NUMBER PLATES	NUMBER MEAS.	SPAN
VACUUM	AIR					
2949.926	2949.064	05 K	33899.16	2	3	8
2949.290	2948.428	433 RM	33906.47	1	2	6
2948.746	2947.884	877 A*	33912.72	2	4	20
2948.25	2947.39	363 RM	33918.4	1	1	
2942.204	2941.342	344 A*	33988.13	2	4	19
2939.978	2939.118	072 RM	34013.86	1	2	16
2938.712	2937.853	806 RM	34028.51	1	2	16
2937.77	2936.91	905 A*	34039.4	2	4	28
2936.96	2936.10	1 RM	34048.8	1	1	
2932.37	2931.51	479 D FE II	34102.1	1	1	
2930.465	2929.608	620 A	34124.28	1	2	8
2929.88	2929.02	009 A*	34131.1	2	4	42
2927.43	2926.57	584 D FE II	34159.7	1	2	36
2926.753	2925.897	901 A	34167.56	1	2	7
2926.21	2925.35	359 RM	34173.9	1	2	26
2924.709	2923.853	851 RM	34191.44	1	2	25
2924.154	2923.298	288 RM	34197.93	1	2	22
2923.59	2922.73	68 K	34204.5	1	1	
2921.544	2920.688	692 A*	34228.48	1	2	13
2919.216	2918.361	354 RM	34255.77	1	2	9
2918.886	2918.032	023 RM	34259.65	1	2	4
2915.153	2914.299	306 A	34303.52	1	2	11
2913.020	2912.167	159 A*	34328.63	2	4	4
2908.37	2907.52	518 RM	34383.5	1	1	
2902.827	2901.976	94 K	34449.18	1	2	5
2902.232	2901.382	382 A*	34456.24	1	2	0
2900.270	2899.420	416 RM	34479.55	1	2	8
2895.886	2895.037	036 A*	34531.75	1	2	1
2895.359	2894.510	506 A	34538.03	1	2	8
2895.30	2894.45	51 K	34538.7	1	1	
2894.724	2893.875	882 A	34545.61	1	2	10
2894.616	2893.767	763 RM	34546.90	1	2	9
2888.65	2887.80	806 RM	34618.2	1	2	33
2887.16	2886.31	317 A	34636.1	1	2	32
2881.432	2880.587	581 A	34704.97	1	2	18
2878.145	2877.301	302 A	34744.60	2	3	12
2876.152	2875.308	303 A	34768.68	1	2	0
2875.013	2874.169	173 A*	34782.45	2	4	22
2873.17	2872.33	335 A	34804.8	2	3	29
2870.152	2869.310	308 A*	34841.36	2	3	13
2869.313	2868.471	454 RM	34851.55	1	2	10
2868.40	2867.56	563 A	34862.6	1	2	35
2868.154	2867.312	311 RM	34865.63	1	2	11
2867.46	2866.62	626 A	34874.1	2	3	30
2864.711	2863.870	864 A	34907.54	2	3	5
2864.272	2863.431	431 A	34912.89	2	3	16
2863.331	2862.490	495 A*	34924.36	1	2	10
2859.742	2858.902	897 A	34968.19	1	2	6
2854.942	2854.103		35026.98	1	2	7
2852.975	2852.137	13 H	35051.13	2	4	25

TABLE 3 - CONTINUED

WAVELENGTH VACUUM	WAVELENGTH AIR	REMARKS	WAVENUMBER	NUMBER PLATES	NUMBER MEAS.	SPAN
2852.637	2851.799	798 A*	35055.28	2	3	16
2849.553	2848.716	715 A*	35093.22	1	2	1
2847.668	2846.831	831 A	35116.45	1	2	7
2846.427	2845.590	595 RM*	35131.76	2	2	11
2844.810	2843.974	978 A*	35151.73	2	3	4
2844.473	2843.637	631 A*	35155.90	2	4	11
2841.259	2840.424	423 A*	35195.67	2	3	8
2838.958	2838.123	121 A*	35224.19	2	4	4
2836.780	2835.946	951 A*	35251.24	1	2	10
2836.303	2835.469	457 A	35257.16	2	4	14
2835.59	2834.76	755 RM	35266.0	1	2	26
2833.271	2832.438	436 A*	35294.89	2	4	10
2829.646	2828.813	809 A	35340.11	2	3	9
2828.730	2827.898	893 A	35351.55	1	2	7
2827.339	2826.507	50 RM	35368.95	1	2	6
2826.817	2825.985	995 RM	35375.48	1	2	9
2826.533	2825.701	689 A	35379.03	2	2	7
2826.46	2825.63	55 K	35379.9	1	1	
2826.392	2825.560	557 A*	35380.80	2	2	25
2825.44	2824.61	589 D FE II	35392.7	1	1	
2824.108	2823.277	277 A*	35409.41	2	4	8
2821.641	2820.810	804 A	35440.37	1	2	2
2820.135	2819.305	286 D FE II	35459.30	1	2	5
2818.330	2817.500	505 A*	35482.01	1	2	6
2816.346	2815.516	506 RM	35507.00	1	2	9
2814.121	2813.292	288 A*	35535.07	2	4	9
2809.155	2808.327	328 A	35597.89	1	2	4
2808.076	2807.249	246 A*	35611.57	1	2	9
2807.814	2806.987	985 A*	35614.89	2	4	7
2805.701	2804.874	865 RM	35641.72	1	2	11
2805.348	2804.521	521 A*	35646.20	2	4	12
2804.437	2803.611	613 RM	35657.78	1	2	3
2804.002	2803.176	168 A	35663.31	1	2	7
2803.264	2802.438		35672.70	2	2	11
2801.918	2801.092		35689.84	1	2	7
2799.967	2799.142	149 RM-U	35714.71	1	2	2
2799.067	2798.242		35726.19	2	2	7
2798.603	2797.778	777 A*	35732.11	2	4	9
2796.80	2795.98		35755.1	1	1	
2796.73	2795.91	9 K	35756.0	1	1	
2796.364	2795.540	541 A*	35760.72	1	2	3
2796.17	2795.35		35763.2	1	1	
2796.02	2795.20		35765.1	2	2	40
2795.834	2795.010	007 A	35767.50	1	2	7
2795.71	2794.89		35769.1	1	1	
2795.635	2794.811		35770.05	1	2	4
2795.533	2794.709	703 A	35771.35	1	2	18
2793.227	2792.403	397 RM	35800.89	1	2	6
2792.610	2791.787	787 A*	35808.80	1	2	4
2792.286	2791.463	456 RM	35812.95	1	2	25

TABLE 3 - CONTINUED

WAVELENGTH		REMARKS	WAVENUMBER	NUMBER PLATES	NUMBER MEAS.	SPAN
VACUUM	AIR					
2791.73	2790.91		35820.1	1	1	
2791.453	2790.630		35823.64	2	4	25
2790.627	2789.804	803 RM	35834.24	1	2	11
2790.328	2789.505	477 RM	35838.08	1	2	4
2788.928	2788.105	106 RM	35856.07	2	3	11
2788.75	2787.93	933 A	35858.4	1	1	
2785.18	2784.36	346 RM	35904.3	1	1	
2783.727	2782.906		35923.06	2	3	13
2782.663	2781.842	837 A	35936.80	2	2	4
2782.18	2781.36		35943.0	1	1	
2782.13	2781.31		35943.7	1	1	
2781.515	2780.694	700 RM	35951.63	1	2	16
2780.583	2779.762		35963.68	2	3	4
2779.664	2778.884	842 RM-U	35975.57	1	2	6
2779.040	2778.220	221 A*	35983.65	2	4	6
2777.446	2776.626		36004.30	1	2	8
2777.387	2776.567	554 D FE II	36005.07	1	2	5
2775.556	2774.737	730 RM	36028.82	1	2	5
2774.064	2773.265	232 RM-U	36048.19	1	2	3
2773.338	2772.519	511 KRM	36057.63	1	2	10
2772.929	2772.110	111 A*	36062.95	2	4	7
2772.72	2771.90	9 K	36065.7	1	1	
2771.537	2770.719	695 RM	36081.06	1	2	11
2770.491	2769.673	672 A*	36094.69	1	2	5
2770.12	2769.30	299 A	36099.5	1	1	
2769.30	2768.48	46 K	36110.2	1	1	
2768.957	2768.139	14 K	36114.68	1	2	17
2768.343	2767.525	523 A*	36122.69	2	3	4
2767.729	2766.912	910 A*	36130.70	2	3	8
2765.161	2764.344		36164.26	1	2	6
2763.924	2763.108	108 RM	36180.44	2	3	8
2763.608	2762.792	773 A	36184.58	1	2	10
2762.843	2762.027	028 A*	36194.60	2	4	6
2762.602	2761.786	781 A*	36197.76	2	4	7
2760.632	2759.816	814 RM	36223.59	2	3	4
2758.69	2757.87	856 RM-U	36249.1	1	1	
2758.136	2757.321	317 A*	36256.37	2	3	8
2757.142	2756.327	330 A*	36269.44	2	4	4
2756.553	2755.738	733 D FE II	36277.19	2	4	4
2756.00	2755.19	184 RM	36284.5	1	1	
2755.244	2754.430	427 A*	36294.43	2	2	5
2754.849	2754.035	033 A	36299.63	2	3	17
2754.510	2753.696	687 RM	36304.10	2	3	12
2753.95	2753.14	13 K	36311.5	1	1	
2753.91	2752.10	095 H	36312.0	1	1	
2751.711	2750.898	896 D FE II	36341.03	1	2	1
2751.511	2750.698	671 D FE II	36343.67	1	2	24
2750.97	2750.16	142 A*	36350.8	2	4	28
2750.50	2749.69	688 KRM	36357.0	1	2	29
2750.300	2749.487	482 D FE II	36359.67	1	2	8

TABLE 3 - CONTINUED

WAVELENGTH VACUUM	WAVELENGTH AIR	REMARKS	WAVENUMBER	NUMBER PLATES	NUMBER MEAS.	SPAN
2750.137	2749.324	324 D FE II	36361.82	2	3	8
2750.00	2748.19	17 K	36363.6	2	3	38
2748.390	2747.577	556 A	36384.94	1	2	2
2747.804	2746.991	982 RM	36392.70	2	4	9
2747.296	2746.484	487 D FE II	36399.43	2	4	11
2745.339	2744.527	529 A*	36425.37	2	4	8
2744.891	2744.079	069 A*	36431.32	2	3	6
2744.379	2743.567	564 RM	36438.12	2	3	6
2744.005	2743.193	196 D FE II	36443.08	2	4	12
2743.213	2742.402	406 A*	36453.60	2	3	9
2743.07	2742.26	255 A	36455.5	1	1	
2742.84	2742.03	017 RM	36458.6	2	2	35
2742.39	2741.58	578 A*	36464.5	1	1	
2742.124	2741.323	325 D FE II	36468.08	1	2	16
2740.359	2739.548	545 D FE II	36491.57	2	3	3
2739.257	2738.447	44 K	36506.25	1	2	0
2739.020	2738.210	214 A	36509.41	1	2	0
2738.640	2737.830	833 RM-U	36514.47	1	2	4
2738.122	2737.312	311 A*	36521.38	2	3	3
2737.80	2736.99		36525.7	1	1	
2737.756	2736.946	960 RM	36526.26	2	2	23
2737.33	2736.52	500 D FE II	36531.9	1	1	
2736.30	2735.49	476 A*	36545.7	2	4	33
2735.423	2734.613	617 A*	36557.42	1	2	9
2735.104	2734.295	269 A	36561.68	1	2	4
2734.810	2734.001	006 A	36565.61	2	3	4
2734.397	2733.588	582 A*	36571.13	2	4	17
2731.790	2730.981	982 A*	36606.03	2	3	5
2729.784	2728.976	970 A	36632.94	1	2	3
2729.628	2728.820	819 RM	36635.03	1	2	11
2728.828	2728.020	021 A*	36645.77	2	3	7
2728.344	2727.536	538 D FE II	36652.27	2	3	5
2727.047	2726.239	237 RM	36669.70	1	2	1
2726.867	2726.060	054 RM	36672.12	2	3	9
2726.403	2725.596	602 A	36678.36	1	2	4
2726.13	2725.32		36682.0	1	1	
2725.764	2724.957	954 A*	36686.96	2	4	7
2724.391	2723.584	579 A	36705.45	2	3	7
2722.840	2722.034	032 RM	36726.36	1	2	15
2721.718	2720.912	904 A*	36741.50	2	4	13
2721.011	2720.205	194 RM	36751.05	1	2	1
2720.24	2719.43	418 RM	36761.5	1	1	
2719.91	2719.10		36765.9	1	1	
2719.843	2719.037	027 RM	36766.83	2	3	13
2719.244	2718.438	437 A	36774.93	2	3	13
2718.600	2717.795	787 A	36783.64	1	2	11
2718.169	2717.364	368 RM	36789.47	1	2	16
2717.08	2716.27	259 RM	36804.2	1	1	
2716.128	2715.323	323 RM	36817.12	1	2	9
2715.673	2714.868	870 A*	36823.28	1	2	7

TABLE 3 - CONTINUED

WAVELENGTH VACUUM	WAVELENGTH AIR	REMARKS	WAVENUMBER	NUMBER PLATES	NUMBER MEAS.	SPAN
2715.222	2714.417	414 D FE II	36829.40	2	3	9
2714.871	2714.066	062 RM	36834.16	1	2	5
2712.459	2711.655	656 A*	36866.92	2	4	10
2711.350	2710.546	543 RM	36882.00	1	2	1
2709.379	2708.576	570 RM	36908.83	1	2	1
2708.29	2707.49	451 KRM	36923.7	1	1	
2707.384	2706.581	583 A*	36936.02	2	4	5
2706.813	2706.010	012 RM	36943.82	2	3	9
2703.24	2702.44	453 RM	36992.6	1	1	
2699.905	2699.104	108 A*	37038.34	2	4	9
2699.02	2698.22	162 RM-U	37050.5	1	1	
2697.821	2697.021	022 A*	37066.95	1	2	3
2697.131	2696.331	284 RM	37076.43	1	2	9
2696.847	2696.047	996 H	37080.34	1	2	3
2696.456	2695.656	662 RM	37085.72	1	2	17
2695.832	2695.032	036 A*	37094.30	1	2	2
2695.385	2694.585	58 K	37100.45	1	2	1
2695.049	2694.249	222 RM	37105.08	1	2	10
2693.442	2692.643	658 RM	37127.21	1	2	22
2693.056	2692.257	250 A	37132.54	1	2	4
2690.870	2690.071	069 A*	37162.70	1	2	8
2690.629	2689.830	831 A*	37166.03	1	2	5
2690.271	2689.472	5 K	37170.98	1	2	14
2690.010	2689.211	213 RM*	37174.58	2	4	10
2685.646	2684.848	857 RM	37234.99	1	2	1
2684.89	2684.09	068 B	37245.5	1	2	40
2683.058	2682.261	214 H	37270.91	1	2	12
2682.44	2681.64	586 B	37279.5	1	2	26
2681.245	2680.449	450 A*	37296.11	2	3	3
2679.860	2679.064	063 A*	37315.38	2	4	7
2674.008	2673.213	214 A	37397.05	1	2	4
2670.288	2669.494	492 RM	37449.14	1	2	18
2669.86	2669.07	0 B	37455.1	2	3	29
2668.714	2667.921	914 A*	37471.23	1	2	2
2667.757	2666.964	967 A*	37484.67	2	3	13
2667.611	2666.818	813 A*	37486.73	2	4	9
2667.196	2666.403	400 A*	37492.56	2	3	12
2664.914	2664.121	08 B	37524.66	1	2	6
2663.17	2662.38	315 H	37549.2	1	1	
2662.849	2662.057	057 A*	37553.76	2	3	4
2661.978	2661.186	196 RM	37566.05	1	2	23
2661.21	2660.42	396 RM	37576.9	2	4	36
2661.03	2660.24	256 D FE II	37579.4	1	1	
2657.581	2656.790	793 A*	37628.20	1	2	4
2656.937	2656.146	145 RM	37637.32	1	2	7
2653.33	2652.54	557 D FE II	37688.5	2	2	29
2653.24	2652.45	424 D FE II	37689.8	1	1	
2652.498	2651.708	708 A*	37700.31	1	2	1
2648.353	2647.564	559 A*	37759.32	2	3	16
2646.212	2645.424	423 A*	37789.87	1	2	0

TABLE 3 - CONTINUED

WAVELENGTH		REMARKS	WAVENUMBER	NUMBER PLATES	NUMBER MEAS.	SPAN
VACUUM	AIR					
2644.786	2643.998	999 A*	37810.24	2	4	8
2642.429	2641.642	647 A*	37843.97	2	3	12
2637.258	2636.472	479 A*	37918.17	1	2	8
2636.589	2635.803	810 A*	37927.79	2	4	6
2633.391	2632.606	595 A*	37973.85	2	4	17
2633.018	2632.233	238 A*	37979.23	2	4	16
2632.101	2631.316	321 D FE II	37992.46	2	4	12
2631.828	2631.043	045 D FE II	37996.40	2	4	6
2630.361	2629.577	579 RM	38017.60	1	2	0
2629.072	2628.288	291 D FE II	38036.23	2	4	5
2627.989	2627.205	24 H	38051.91	1	2	9
2626.445	2625.662	664 D FE II	38074.28	2	4	9
2624.308	2623.525	532 RM	38105.28	2	4	11
2624.168	2623.385	367 A*	38107.32	2	2	4
2622.448	2621.666	669 D FE II	38132.31	2	4	2
2621.179	2620.397	408 D FE II	38150.77	1	2	7
2619.495	2618.713	711 A*	38175.30	2	3	10
2618.797	2618.015	019 A*	38185.47	2	3	7
2618.396	2617.615	618 D FE II	38191.32	2	4	10
2616.200	2615.412	420 RM-U	38223.38	1	2	17
2615.271	2614.490	495 A*	38236.96	1	2	2
2614.603	2613.822	820 D FE II	38246.72	2	4	5
2613.556	2612.776	773 A*	38262.05	2	3	6
2612.649	2611.659	873 D FE II	38275.33	2	3	4
2611.536	2610.756	750 RM	38291.64	1	2	1
2610.476	2609.696		38307.19	1	2	21
2610.003	2609.224	220 KRM	38314.13	1	2	2
2609.431	2608.652		38322.53	1	2	2
2607.863	2607.084	086 D FE II	38345.57	2	4	14
2607.610	2606.831	828 A*	38349.29	2	4	25
2607.05	2606.27	30 K	38357.5	1	1	
2606.430	2605.651	658 A*	38366.65	2	2	3
2605.572	2604.794	751 RM-U	38379.29	1	2	6
2604.382	2603.604	553 RM-U	38396.83	1	2	12
2600.993	2600.216	202 RM-U	38446.85	1	2	1
2600.349	2599.572	565 RM	38456.38	2	2	8
2600.23	2599.45	40 K	38458.1	1	1	
2600.178	2599.401	395 D FE II	38458.91	2	2	6
2599.60	2598.82		38467.5	1	1	
2599.146	2598.369	369 D FE II	38474.18	2	4	9
2596.21	2595.43	422 RM	38517.7	1	1	
2594.913	2594.137	150 RM	38536.94	1	2	6
2594.83	2594.05	046 RM-U	38538.2	1	2	35
2594.374	2593.598		38544.94	2	3	8
2593.073	2592.298	285 RKM	38564.28	1	2	1
2592.320	2591.545	542 D FE II	38575.48	2	2	6
2592.046	2591.271	252 RM-U	38579.56	1	2	0
2588.811	2588.037	010 RM-U	38627.77	2	3	7
2586.647	2585.873	876 D FE II	38660.09	2	4	10
2585.311	2584.537	537 A*	38680.07	3	5	15

TABLE 3 - CONTINUED

WAVELENGTH VACUUM	WAVELENGTH AIR	REMARKS	WAVENUMBER	NUMBER PLATES	NUMBER MEAS.	SPAN
2583.351	2582.578	582 D FE II	38709.41	3	4	23
2583.107	2582.334	297 RM-U	38713.07	3	5	20
2582.255	2581.482	460 B	38725.84	1	2	10
2581.727	2580.954	939 KRM	38733.76	1	2	4
2581.224	2580.451	454 A*	38741.31	1	2	4
2581.06	2580.29	281 RKM	38743.8	1	1	
2580.841	2580.068	066 A*	38747.06	1	2	6
2580.61	2579.84	841 B	38750.5	1	1	
2580.037	2579.265	266 RM	38759.13	1	2	11
2578.80	2578.03	02 H	38777.7	1	1	
2578.681	2577.909	920 D FE II	38779.52	3	4	24
2577.458	2576.686	692 A*	38797.92	3	5	21
2576.734	2575.962		38808.82	2	2	6
2576.543	2575.771	76 K	38811.69	3	4	6
2576.18	2575.41		38817.2	1	1	
2575.888	2575.117		38821.56	3	5	21
2573.521	2572.750	752 RM	38857.27	2	3	5
2571.305	2570.535	525 B	38890.76	2	3	9
2570.512	2569.742	742 RM	38902.76	1	2	2
2570.366	2569.596	595 RM	38904.97	2	2	0
2569.635	2568.865	862 RM	38916.03	2	3	7
2568.774	2568.004		38929.08	3	3	14
2567.681	2566.912	908 D FE II	38945.65	3	4	9
2565.327	2564.558	561 A*	38981.39	2	3	7
2564.247	2563.478	472 D FE II	38997.80	2	3	10
2564.204	2563.435		38998.46	1	2	0
2563.301	2562.533	535 D FE II	39012.20	2	4	8
2563.07	2562.30		39015.7	1	1	
2563.001	2562.233	224 RM	39016.76	1	2	6
2562.627	2561.859	856 A*	39022.46	1	2	7
2562.040	2561.272	262 RM	39031.40	1	2	7
2561.327	2560.559	558 A*	39042.26	1	2	10
2559.27	2558.50		39073.6	1	1	
2557.631	2556.864	862 RM	39098.68	1	2	2
2557.068	2556.301	304 A*	39107.29	1	2	5
2556.416	2555.649	648 RM	39117.26	1	2	12
2556.043	2555.276		39122.97	1	2	14
2554.26	2553.49		39150.3	1	1	
2554.20	2553.43		39151.2	1	1	
2553.962	2553.196	193 RM-U	39154.85	1	2	5
2553.596	2552.830	832 A*	39160.46	1	2	6
2553.369	2552.603	604 A	39163.94	3	2	3
2551.872	2551.106	094 RM-U	39186.92	3	4	8
2551.578	2550.812	812 KRM	39191.43	1	2	4
2551.319	2550.553		39195.41	1	2	9
2550.62	2549.85		39206.2	1	1	
2550.386	2549.621	614 A*	39209.75	3	3	2
2548.893	2548.128		39232.72	3	2	5
2547.656	2546.891	86 RM-U	39251.77	3	4	6
2546.792	2546.028		39265.08	2	2	5

TABLE 3 - CONTINUED

WAVELENGTH WAVELENGTH	REMARKS REMARKS	WAVENUMBER WAVENUMBER	NUMBER NUMBER	NUMBER NUMBER	SPAN SPAN	
2546.747	2545.983	980 A*	39265.78	1	2	12
2546.61	2545.85	86 K	39267.9	1	1	
2545.51	2544.75	73 K	39284.9	1	1	
2545.484	2544.720	706 RM	39285.26	3	3	17
2545.251	2544.487	462 KRM	39288.86	1	2	12
2544.694	2543.930	920 RM	39297.46	3	5	18
2544.180	2543.416	431 D FE II	39305.40	1	2	6
2543.20	2542.44		39320.5	1	1	
2542.873	2542.109	101 RM	39325.60	3	5	11
2541.747	2540.984	973 A*	39343.02	3	5	11
2541.71	2540.95		39343.6	1	1	
2541.416	2540.653	669 D FE II	39348.14	2	2	12
2540.344	2539.581	575 RM	39364.75	1	2	13
2540.124	2539.361	358 A*	39368.16	3	3	1
2539.603	2538.840		39376.23	2	3	11
2539.465	2538.702	693 KRM	39378.37	1	2	19
2538.221	2537.459	460 A*	39397.67	1	2	6
2537.947	2537.185	174 B	39401.93	3	3	2
2537.536	2536.774		39408.31	3	4	2
2536.370	2535.608	609 A*	39426.42	4	5	11
2535.904	2535.142	128 RM	39433.67	1	2	8
2534.585	2533.823	802 RM-U	39454.19	4	5	13
2534.37	2533.61	626 D FE II	39457.5	1	1	
2533.897	2533.136	139 B	39464.90	2	3	22
2533.637	2532.876	876 A*	39468.95	2	2	2
2532.278	2531.517	5 RM	39490.13	1	2	10
2531.450	2530.689	694 RM	39503.05	4	6	4
2530.594	2529.833	837 A*	39516.41	4	5	6
2530.29	2529.53	545 D FE II	39521.2	1	1	
2530.07	2529.31	306 KRM	39524.6	1	1	
2530.01	2529.25	221 D FE II	39525.5	1	1	
2529.911	2529.150	136 A*	39527.08	4	5	19
2529.319	2528.559		39536.33	2	2	6
2529.26	2528.50		39537.3	1	1	
2528.96	2528.20		39541.9	1	1	
2528.878	2528.118		39543.23	2	2	2
2528.37	2527.61		39551.2	1	1	
2528.246	2527.486		39553.11	3	3	5
2528.207	2527.447	436 A*	39553.72	2	3	7
2526.950	2526.190		39573.40	2	3	24
2526.33	2525.57		39583.1	1	1	
2526.14	2525.38	386 D FE II	39586.1	1	1	
2525.788	2525.028	021 RM-U	39591.60	3	3	4
2525.35	2524.59	603 KRM	39598.5	1	1	
2525.054	2524.295	294 A*	39603.11	4	5	11
2524.84	2524.08		39606.5	2	2	41
2524.414	2523.655	658 RM-U	39613.15	4	4	14
2523.93	2523.17	11 RM-U	39620.8	1	1	
2523.74	2522.98		39623.7	1	1	
2523.632	2522.873	851 A*	39625.43	4	3	10

TABLE 3 - CONTINUED

WAVELENGTH VACUUM	WAVELENGTH AIR	REMARKS	WAVENUMBER	NUMBER PLATES	NUMBER MEAS.	SPAN
2523.123	2522.364		39633.42	2	2	1
2522.68	2521.92	920 A*	39640.4	2	4	41
2521.77	2521.01	968 RM-U	39654.7	2	4	30
2520.385	2519.627	631 A*	39676.48	4	5	8
2519.969	2519.211		39683.03	2	2	17
2519.579	2518.821	824 KRM	39689.17	1	2	24
2518.97	2518.21		39698.8	1	1	
2518.875	2518.117	103 A*	39700.26	4	4	15
2518.76	2518.00		39702.1	1	1	
2518.42	2517.66	658 RM	39707.4	3	6	32
2517.878	2517.120	124 D FE II	39715.98	2	4	19
2517.327	2516.569	572 A*	39724.68	2	4	20
2517.001	2516.244	249 RM	39729.82	2	3	13
2516.905	2516.148		39731.34	2	2	9
2516.69	2515.93	925 D FE II	39734.7	1	1	
2516.627	2515.870	848 RM	39735.73	2	3	8
2515.468	2514.711	707 B	39754.03	2	3	2
2515.137	2514.380	383 D FE II	39759.27	1	2	14
2515.09	2514.33	328 B	39760.0	2	3	40
2514.62	2513.86	847 RM	39767.4	1	1	
2514.28	2513.52	496 B	39772.8	2	2	51
2513.20	2512.44		39789.9	1	1	
2513.103	2512.346	361 RM	39791.45	3	6	22
2513.02	2512.26	266 KRM	39792.8	1	1	
2512.51	2511.75	759 D FE II	39800.8	1	1	
2512.13	2511.37	375 D FE II	39806.9	1	1	
2511.657	2510.901		39814.35	1	2	0
2511.622	2510.866		39814.91	2	2	3
2511.593	2510.837	836 A*	39815.37	2	3	15
2509.505	2508.749	751 RM	39848.50	2	4	2
2508.652	2507.896	899 RM	39862.05	4	5	10
2508.20	2507.44	40 KY	39869.2	1	1	
2507.67	2506.91		39877.7	2	2	31
2507.333	2506.578	569 RM	39883.02	2	3	4
2507.27	2506.51		39884.0	1	1	
2506.412	2505.657	627 RM-U	39897.67	2	3	17
2506.32	2505.56		39899.1	1	1	
2506.257	2505.502	485 RM-U	39900.14	2	3	9
2505.768	2505.013	004 RM	39907.92	2	3	12
2504.271	2503.516	491 RM	39931.78	2	3	2
2503.255	2502.501	503 KRM	39947.99	2	3	11
2502.449	2501.695	695 A*	39960.85	2	3	11
2501.922	2501.168		39969.27	2	2	4
2501.885	2501.131	133 A*	39969.86	1	2	16
2499.610	2498.857	895 A* FE II	40006.24	2	3	24
2497.759	2497.006	992 M	40035.89	2	3	8
2497.285	2496.532	534 A*	40043.49	3	5	14
2496.847	2496.094	065 KY	40050.51	2	3	6
2496.628	2495.875	869 RM	40054.02	3	3	5
2495.001	2494.249	253 A*	40080.14	3	3	7

TABLE 3 - CONTINUED

WAVELENGTH		REMARKS	WAVENUMBER	NUMBER PLATES	NUMBER MEAS.	SPAN
VACUUM	AIR					
2494.751	2493.999	998 RM	40084.16	3	4	11
2494.02	2493.27	269 D FE II	40095.9	1	1	
2493.389	2492.637	64 RM	40106.06	2	2	12
2493.16	2492.41		40109.7	1	1	
2492.75	2492.00	983 RM	40116.3	1	1	
2492.07	2491.32		40127.3	1	1	
2491.922	2491.170	156 A*	40129.67	2	2	12
2491.44	2490.69	645 A*	40137.4	2	3	56
2490.637	2489.886	917 KRM	40150.37	2	2	23
2490.507	2489.756	751 RM	40152.47	3	3	17
2490.35	2489.60		40155.0	1	1	
2490.23	2489.48	485 D FE II	40156.9	1	1	
2489.724	2488.973	942 RM	40165.09	2	2	1
2489.63	2488.88		40166.6	1	1	
2489.44	2488.69		40169.7	1	1	
2489.07	2488.32	335 D FE II	40175.6	1	1	
2488.936	2488.185	144 A*	40177.81	3	3	8
2488.67	2487.92		40182.1	1	1	
2488.115	2487.364	371 A*	40191.07	3	2	1
2487.87	2487.12		40195.0	1	1	
2487.81	2487.06	064 RM	40196.0	4	7	28
2487.437	2486.686	690 RM	40202.02	4	5	3
2487.116	2486.365	372 RM	40207.21	4	7	13
2486.736	2485.986	989 RM	40213.36	3	4	6
2484.949	2484.199	186 RM	40242.27	3	4	25
2484.06	2483.31	272 A*	40256.7	3	4	50
2483.67	2482.92		40263.0	1	1	
2482.79	2482.04		40277.3	1	1	
2481.90	2481.15		40291.7	1	1	
2481.26	2480.51		40302.1	1	1	
2481.18	2480.43	393 KRM	40303.4	1	1	
2480.97	2480.22		40306.8	1	1	
2480.65	2479.90		40312.0	1	1	
2480.528	2479.779	777 A*	40314.00	4	3	4
2480.22	2479.47	481 A*	40319.0	4	4	42
2480.00	2479.25	225 D FE II	40322.6	1	1	
2479.70	2478.95		40327.5	1	1	
2478.29	2477.54		40350.4	1	1	
2477.615	2476.867	861 RM	40361.40	2	2	4
2477.401	2476.653	654 RM	40364.88	3	4	8
2477.264	2476.516		40367.11	2	3	15
2476.83	2476.08	030 B	40374.2	2	3	49
2476.23	2475.48	466 KRM	40384.0	1	1	
2475.836	2475.088		40390.40	2	2	9
2475.562	2474.814	815 A*	40394.87	4	6	21
2473.857	2473.110	156 RM	40422.71	2	2	19
2473.813	2473.066	07 KY	40423.43	2	2	19
2473.695	2472.948	910 RM	40425.36	3	2	9
2473.634	2472.887	896 A*	40426.35	2	2	8
2473.56	2472.81		40427.6	1	1	

TABLE 3 - CONTINUED

WAVELENGTH		REMARKS	WAVENUMBER	NUMBER PLATES	NUMBER MEAS.	SPAN
VACUUM	AIR					
2473.35	2472.60	610 D FE II	40431.0	1	1	
2473.086	2472.339	343 RM	40435.31	4	3	7
2471.707	2470.960	961 RM	40457.87	3	4	11
2470.693	2469.946	9 KY	40474.47	1	2	6
2470.397	2469.650	666 KRM	40479.32	1	2	24
2469.624	2468.877	880 A*	40491.99	4	7	13
2468.764	2468.018		40506.10	2	2	10
2468.475	2467.729	733 A*	40510.84	4	6	8
2468.36	2467.61	573 KRM	40512.7	2	1	
2467.509	2466.763		40526.70	2	3	8
2467.30	2466.55	530 KRM	40530.1	1	1	
2465.893	2465.147	150 A*	40553.26	3	5	16
2464.473	2463.728	728 RM	40576.63	3	4	15
2464.08	2463.33		40583.1	1	1	
2463.416	2462.671	648 A*	40594.04	4	5	6
2462.929	2462.184	182 A*	40602.06	3	3	4
2461.850	2461.105		40619.86	1	2	10
2461.039	2460.294	31 RM-U	40633.24	2	2	7
2459.313	2458.569	564 RM	40661.76	2	3	2
2458.342	2457.598	598 A*	40677.82	4	5	4
2456.966	2456.222		40700.60	2	3	20
2456.39	2455.65		40710.1	1	2	29
2454.221	2453.478	477 A*	40746.13	4	4	12
2453.350	2452.607	590 RM	40760.59	2	2	1
2452.93	2452.19	206 D FE II	40767.6	1	1	
2452.463	2451.720	697 KRM	40775.33	2	3	6
2452.15	2451.41	384 KRM	40780.5	2	2	30
2451.207	2450.465	439 KRM	40796.23	2	2	6
2448.456	2447.714	711 A*	40842.07	4	4	6
2445.949	2445.208	213 A*	40883.93	2	3	5
2445.24	2444.50	515 D FE II	40895.8	1	1	
2444.610	2443.869	873 A*	40906.32	4	4	7
2443.326	2442.586	567 RM	40927.82	4	5	8
2440.862	2440.122	106 RM	40969.13	3	3	2
2440.49	2439.75	743 RM	40975.4	4	4	29
2439.92	2439.18	169 KRM	40985.0	1	1	
2438.918	2438.179	183 A*	41001.79	3	4	5
2438.09	2437.35		41015.7	1	1	
2437.099	2436.360	344 RM-U	41032.39	1	2	10
2436.64	2435.90	865 RM-U	41040.1	1	1	
2432.05	2431.31	3 KY	41117.6	1	1	
2431.782	2431.044	025 RM-U	41122.11	2	3	9
2430.80	2430.06	073 D FE II	41138.7	1	1	
2430.55	2429.81	810 RM	41143.0	1	1	
2424.87	2424.13	141 D FE II	41239.3	1	1	
2423.85	2423.11	094 RM	41256.7	1	1	
2420.16	2419.42	4 KY	41319.6	1	1	
2419.92	2419.18		41323.7	1	1	
2414.047	2413.313	308 D FE II	41424.21	3	3	4
2411.810	2411.077	062 D FE II	41462.64	3	4	9

TABLE 3 - CONTINUED

WAVELENGTH		REMARKS	WAVENUMBER	NUMBER PLATES	NUMBER MEAS.	SPAN
VACUUM	AIR					
2411.49	2410.76		41468.1	1	1	
2411.261	2410.528	521 D FE II	41472.08	3	4	13
2408.79	2408.06	045 RM	41514.6	1	1	
2408.34	2407.61		41522.4	1	1	
2407.401	2406.669	660 D FE II	41538.57	2	4	12
2405.624	2404.892	882 D FE II	41569.26	3	4	17
2405.23	2404.50		41576.1	1	1	
2405.170	2404.438	430 D FE II	41577.10	2	2	3
2403.34	2402.61	597 D FE II	41608.8	1	1	
2402.88	2402.15		41616.7	1	1	
2402.24	2401.51	52 KY	41627.8	1	1	
2401.90	2401.17	136 KRM	41633.7	1	1	
2399.983	2399.252	237 D FE II	41666.96	2	2	8
2396.37	2395.64	627 D FE II	41729.8	2	4	62
2396.30	2395.57		41731.0	2	1	
2396.153	2395.423	416 D FE II	41733.56	2	3	16
2394.99	2394.26	2 KY	41753.8	1	1	
2392.21	2391.48	475 D FE II	41802.4	1	1	
2390.706	2389.978	973 A*	41828.65	2	3	4
2389.361	2388.633	629 D FE II	41852.19	2	4	4
2385.73	2385.00	999 D FE II	41915.9	1	1	
2385.124	2384.397	386 D FE II	41926.54	2	4	12
2383.984	2383.257	242 D FE II	41946.59	2	3	7
2383.800	2383.073	060 D FE II	41949.83	2	4	19
2383.18	2382.45		41960.7	1	1	
2383.09	2382.36	356 D FE II	41962.3	1	1	
2382.772	2382.045	034 D FE II	41967.93	2	3	20
2382.561	2381.834	836 A	41971.64	3	3	8
2381.489	2380.763	757 D FE II	41990.54	2	3	5
2380.004	2379.278	275 D FE II	42016.74	2	4	19
2379.214	2378.488	526 D FE II	42030.69	1	2	16
2379.12	2378.39		42032.4	1	1	
2379.03	2378.30		42033.9	1	1	
2378.693	2377.967	991 RM	42039.89	1	2	1
2377.98	2377.25	24 KY	42052.5	1	1	
2375.928	2375.203	192 D FE II	42088.82	2	3	10
2375.250	2374.525	519 A*	42100.83	3	5	16
2374.470	2373.745	733 D FE II	42114.66	2	2	5
2374.40	2373.68		42115.9	1	1	
2374.338	2373.613	625 A*	42117.00	2	2	3
2373.934	2373.209		42124.17	2	3	19
2373.84	2373.12		42125.8	1	1	
2373.45	2372.73		42132.8	1	1	
2372.89	2372.17		42142.7	1	1	
2372.59	2371.87		42148.0	1	1	
2372.156	2371.432	431 A*	42155.74	3	5	11
2371.220	2370.496	494 D FE II	42172.38	2	3	5
2370.176	2369.452	457 A*	42190.96	3	5	10
2369.61	2368.89		42201.0	1	1	
2369.316	2368.592	593 D FE II	42206.27	2	3	5

TABLE 3 - CONTINUED

WAVELENGTH		REMARKS	WAVENUMBER	NUMBER PLATES	NUMBER MEAS.	SPAN
VACUUM	AIR					
2367.832	2367.109		42232.73	2	2	2
2367.77	2367.05		42233.8	1	1	
2367.59	2366.86	864 D FE II	42237.0	1	1	
2367.331	2366.608	591 D FE II	42241.66	2	2	5
2365.556	2364.833	825 D FE II	42273.36	2	4	17
2362.84	2362.12		42322.0	1	1	
2362.742	2362.020	014 D FE II	42323.71	2	4	21
2361.31	2360.59		42349.4	1	1	
2361.025	2360.303	287 D FE II	42354.49	2	2	0
2360.722	2360.000	999 D FE II	42359.92	2	3	7
2359.834	2359.113	111 D FE II	42375.86	3	4	22
2356.62	2355.90	915 RM	42433.7	1	1	
2356.049	2355.328	327 RM	42443.94	2	2	6
2355.618	2354.897	884 D FE II	42451.70	2	2	6
2355.03	2354.31		42462.3	1	1	
2352.60	2351.88	884 KRM	42506.2	1	1	
2351.130	2350.410	408 RM	42532.74	2	2	9
2349.02	2348.30	300 D FE II	42570.9	2	4	51
2348.842	2348.123	118 D FE II	42574.17	2	3	18
2347.027	2346.308	304 KRM	42607.09	2	2	9
2346.27	2345.55		42620.8	3	3	80
2345.788	2345.070	07 KY	42629.60	2	4	4
2345.003	2344.285	278 D FE II	42643.87	2	3	2
2344.683	2343.965	958 D FE II	42649.69	2	4	14
2344.50	2343.78		42653.0	1	1	
2344.220	2343.502	495 D FE II	42658.11	2	4	8
2341.05	2340.33	352 D FE II	42715.9	1	1	
2340.387	2339.670		42727.98	2	3	6
2338.732	2338.015	005 D FE II	42758.21	2	4	6
2335.97	2335.25	246 KRM	42808.8	1	1	
2335.24	2334.52	522 D FE II	42822.2	1	1	
2333.517	2332.801	798 D FE II	42853.77	2	4	5
2332.027	2331.312	308 D FE II	42881.15	2	4	12
2330.36	2329.65	641 E1*	42911.8	2	2	27
2328.114	2327.400	391 D FE II	42953.22	2	3	5
2326.529	2325.815		42982.49	2	4	15
2326.03	2325.32	296 D FE II	42991.7	1	1	
2324.34	2323.63	627 KMR	43023.0	1	1	
2324.13	2323.42	416 KMR	43026.9	1	1	
2322.110	2321.397		43064.28	3	4	10
2321.073	2320.360	359 A*	43083.52	3	5	15
2320.759	2320.046		43089.35	3	4	10
2319.71	2319.00		43108.8	1	1	
2318.899	2318.187	19 S	43123.91	2	2	8
2318.62	2317.91	872 RM	43129.1	1	1	
2317.863	2317.151		43143.19	2	2	15
2316.22	2315.51		43173.8	1	1	
2314.70	2313.99	962 D FE II	43202.1	1	1	
2314.360	2313.649	650 KRM	43208.49	2	2	3
2313.820	2313.109	105 A*	43218.57	3	4	4

TABLE 3 - CONTINUED

WAVELENGTH VACUUM	AIR	REMARKS	WAVENUMBER	NUMBER PLATES	NUMBER MEAS.	SPAN
2313.059	2312.348		43232.79	3	4	6
2311.678	2310.967		43258.62	3	5	20
2309.706	2308.996	000 A*	43295.55	3	5	10
2307.99	2307.28	311 D FE II	43327.7	1	1	
2307.081	2306.371	378 RM	43344.82	2	3	6
2306.90	2306.19	164 RM	43348.2	2	2	29
2305.453	2304.744	727 RM	43375.42	2	2	1
2304.28	2303.57	582 A	43397.5	3	4	27
2304.21	2303.50		43398.8	1	1	
2304.131	2303.422	422 RM	43400.31	2	2	10
2302.392	2301.683	685 A*	43433.09	3	4	9
2301.882	2301.173	171 RM-U	43442.71	3	3	2
2301.31	2300.60	599 RM	43453.5	1	1	
2300.86	2300.15	140 RM	43462.0	3	3	26
2300.81	2300.10		43463.0	1	1	
2300.20	2299.49	453 RM	43474.5	1	1	
2299.931	2299.223	221 A*	43479.57	3	5	11
2299.363	2298.655	657 RM	43490.31	2	3	12
2298.883	2298.175	170 A*	43499.39	3	4	7
2298.498	2297.790	788 A*	43506.67	3	5	14
2297.635	2296.927	928 A*	43523.01	3	5	16
2295.119	2294.412	406 RM	43570.73	3	3	3
2294.554	2293.847	845 RM	43581.45	2	2	4
2292.710	2292.523	525 A*	43606.62	3	5	8
2292.336	2291.629	627 A	43623.62	2	2	0
2291.846	2291.140	122 RM	43632.95	3	4	10
2291.493	2290.787	771 RM	43639.67	2	2	20
2291.274	2290.568	546 RM	43643.84	3	3	7
2290.765	2290.059	064 RM	43653.54	2	2	9
2289.74	2289.03	032 RM	43673.4	2	3	49
2289.67	2288.96		43674.4	1	1	
2288.73	2288.02		43692.4	1	1	
2288.352	2287.646	632 RM	43699.57	3	3	4
2288.08	2287.37		43704.8	1	1	
2287.957	2287.251	251 A*	43707.12	3	4	6
2287.17	2286.46	442 KRM	43722.2	1	1	
2284.792	2284.087	086 A*	43767.66	3	5	11
2284.65	2283.95		43770.4	1	1	
2284.360	2283.655	656 A*	43775.94	3	5	10
2284.007	2283.302	305 A*	43782.70	3	4	11
2283.806	2283.101	079 RM	43786.56	2	2	7
2283.579	2282.874	861 RM	43790.91	2	2	10
2282.697	2281.992	986 RM	43807.83	2	2	4
2280.94	2280.24	222 RM	43841.6	3	4	26
2280.634	2279.930	922 RM	43847.46	3	5	10
2279.48	2278.78	773 D FE II	43869.7	1	1	
2279.32	2278.62	614 RM	43872.7	1	1	
2278.391	2277.687	663 RM	43890.62	3	5	14
2277.825	2277.122	098 RM	43901.53	2	3	17
2276.729	2276.026	026 A*	43922.66	3	5	7

TABLE 3 - CONTINUED

WAVELENGTH		REMARKS	WAVENUMBER	NUMBER PLATES	NUMBER MEAS.	SPAN
VACUUM	AIR					
2276.30	2275.60	593 RM	43930.9	1	1	
2276.17	2275.47		43933.4	1	1	
2275.892	2275.189	189 RM	43938.82	2	4	7
2275.32	2274.61		43949.9	1	1	
2274.809	2274.106	088 RM	43959.73	3	3	1
2274.38	2273.68		43968.0	1	1	
2273.543	2272.840	816 RM	43984.21	2	4	23
2273.32	2272.62	610 KRM	43988.5	1	1	
2272.769	2272.067	070 A*	43999.19	3	5	10
2272.505	2271.803	781 RM	44004.30	3	3	8
2271.558	2270.856	863 A*	44022.65	3	4	1
2270.54	2269.84		44042.4	1	1	
2269.90	2269.20		44054.8	1	1	
2269.809	2269.107	099 A*	44056.57	2	3	10
2268.203	2267.502	465 RM	44087.76	2	4	7
2267.784	2267.083	085 A*	44095.91	2	4	14
2267.63	2266.93	903 B	44098.9	1	1	
2266.29	2265.59	61 RM	44125.0	1	1	
2265.752	2265.051	055 A*	44135.46	3	5	11
2265.110	2264.409	389 RM	44147.97	3	4	8
2264.44	2263.74	76 S	44161.0	1	1	
2264.256	2263.556		44164.62	1	2	11
2264.19	2263.49	476 RM	44165.9	2	3	41
2261.504	2260.804	388 RM	44220.00	2	3	12
2261.303	2260.603	594 RM	44222.29	2	2	7
2260.783	2260.083	078 D FE II	44232.46	2	2	2
2260.212	2259.512	511 A*	44243.64	3	5	14
2259.997	2259.297	279 RM	44247.85	2	3	14
2258.69	2257.99		44273.5	1	1	
2256.586	2255.887	861 RM	44314.73	3	3	6
2253.97	2253.27		44366.2	1	1	
2253.832	2253.134	119 D FE II	44368.88	2	3	4
2252.576	2251.878	875 A*	44393.62	3	5	7
2252.37	2251.67		44397.7	1	1	
2251.64	2250.94	937 D FE II	44412.1	1	1	
2251.490	2250.792	791 A	44415.03	3	3	3
2249.882	2249.185	181 D FE II	44446.78	2	2	7
2249.569	2248.872	858 RM	44452.96	3	3	22
2246.75	2246.05		44508.7	1	1	
2246.354	2245.657	654 A*	44516.58	3	4	18
2245.00	2244.30		44543.4	1	1	
2244.60	2243.90	911 RM	44551.4	1	1	
2243.49	2242.79		44573.4	1	1	
2243.263	2242.567	573 A*	44577.92	2	2	8
2243.22	2242.52		44578.8	1	1	
2243.19	2242.49		44579.4	1	1	
2242.55	2241.85	85 RM	44592.1	1	1	
2241.333	2240.637	627 RM	44616.31	3	4	8
2238.96	2238.26	259 RM	44663.6	1	1	
2238.35	2237.66		44675.8	1	1	

TABLE 3 - CONTINUED

WAVELENGTH		REMARKS	WAVENUMBER	NUMBER PLATES	NUMBER MEAS.	SPAN
VACUUM	AIR					
2235.53	2234.84	81 RM	44732.1	1	1	
2235.140	2234.446	432 RM	44739.93	2	2	7
2231.911	2231.217	214 A*	44804.65	3	5	4
2230.79	2230.10		44827.2	1	1	
2229.773	2229.080	074 A	44847.61	2	2	7
2229.43	2228.74	733 D FE II	44854.5	1	1	
2229.22	2228.53	489 RM	44858.7	1	1	
2228.868	2228.175	172 A	44865.82	3	4	8
2228.46	2227.77		44874.0	1	1	
2227.00	2226.31	324 D FE II	44903.5	1	1	
2226.40	2225.71		44915.6	1	1	
2224.46	2223.77	747 KRM	44954.7	1	1	
2223.452	2222.760	75 RM	44975.11	2	2	7
2222.53	2221.84	834	44993.8	1	1	
2221.60	2220.91	912 RM	45012.6	2	2	28
2220.91	2220.22		45026.6	1	1	
2219.77	2219.08		45049.7	1	1	
2219.25	2218.56		45060.3	1	1	
2218.694	2218.003		45071.56	2	2	14
2218.47	2217.78	744 RM	45076.1	1	1	
2217.356	2216.666		45098.76	2	3	11
2217.24	2216.55		45101.1	1	1	
2216.69	2216.00		45112.3	1	1	
2216.55	2215.86	620 KRM	45155.0	1	1	
2212.41	2211.72		45199.6	1	1	
2211.93	2211.24	236 A	45209.4	1	1	
2211.589	2210.900		45216.36	2	2	25
2211.375	2210.686	689 A*	45220.73	3	3	13
2210.850	2210.161		45231.47	2	2	5
2210.807	2210.118		45232.35	2	2	8
2210.42	2209.73	723 D FE II	45240.3	1	1	
2209.44	2208.75	714 KRM	45260.3	1	1	
2208.68	2207.99		45275.9	1	1	
2207.756	2207.068	069 A*	45294.86	3	3	13
2205.469	2204.781		45341.83	2	3	25
2205.35	2204.66		45344.3	1	1	
2201.799	2201.112	117 RM	45417.41	2	3	14
2201.410	2200.723	723 RM	45425.43	3	5	18
2201.072	2200.385	370 RM	45432.41	3	5	12
2200.70	2200.01		45440.1	1	1	
2200.28	2199.59	563 D FE II	45448.8	1	1	
2197.92	2197.23	230 RM	45497.6	1	1	
2196.730	2196.044	043 A*	45522.21	3	4	11
2196.31	2195.62		45530.9	1	1	
2194.119	2193.433	411 RM	45576.38	2	2	7
2193.53	2192.85	819 KRM	45588.6	1	1	
2192.89	2192.21		45601.9	1	1	
2192.530	2191.845	836 RM	45609.41	3	5	7
2192.37	2191.69		45612.7	1	1	
2191.889	2191.204	205 A	45622.75	3	3	4

TABLE 3 - CONTINUED

WAVELENGTH		REMARKS	WAVENUMBER	NUMBER PLATES	NUMBER MEAS.	SPAN
VACUUM	AIR					
2191.479	2190.794	772 RM	45631.28	3	3	9
2190.09	2189.41	393 RM	45660.2	1	1	
2189.87	2189.19	183 RM	45664.8	1	1	
2187.874	2187.190	195 A*	45706.47	3	5	20
2187.575	2186.891	893 A*	45712.72	3	5	16
2187.174	2186.490	483 RM	45721.10	3	5	9
2186.932	2186.248	241 RM	45726.16	2	2	13
2185.89	2185.21	216 KRM	45748.0	1	1	
2185.14	2184.46	46 KRM	45763.7	1	1	
2184.675	2183.991	95C S	45773.40	3	4	24
2184.155	2183.471	465 RM	45784.30	2	2	2
2182.414	2181.730		45820.82	3	3	14
2182.17	2181.49		45825.9	1	1	
2181.83	2181.14	133 RM	45833.1	1	1	
2181.552	2180.869	869 A*	45838.93	3	3	6
2180.92	2180.24	27C S	45852.2	1	1	
2179.97	2179.29		45872.2	2	2	45
2179.636	2178.953	95 RM	45879.22	3	3	6
2179.48	2178.80	797 KRM	45882.5	1	1	
2178.774	2178.092	073 RM	45897.37	3	5	9
2177.527	2176.845	841 A*	45923.66	3	5	8
2177.37	2176.69	670 KRM	45927.0	1	1	
2177.10	2176.42	396 RM	45932.7	1	1	
2176.19	2175.50	100 C	45951.7	1	1	
2174.88	2174.20		45979.5	1	2	44
2174.83	2174.15	142 KRM	45980.6	2	2	32
2174.77	2174.09		45981.9	1	1	
2173.901	2173.220	215 A*	46000.25	3	5	7
2173.263	2172.582	586 A*	46013.76	3	3	2
2172.828	2172.147	137 RM	46022.97	2	3	10
2171.967	2171.286	298 A	46041.22	3	4	3
2171.242	2170.561	554 KRM	46056.59	3	2	12
2170.656	2169.975	96C S	46069.02	3	4	23
2169.593	2168.912		46091.59	2	3	18
2169.50	2168.82		46093.6	1	1	
2169.12	2168.44	42C S	46101.6	1	1	
2169.07	2168.39		46102.7	1	1	
2169.05	2168.37		46103.1	1	1	
2168.737	2168.057	08C S	46109.79	2	2	17
2168.08	2167.40	404 G	46123.8	1	1	
2168.04	2167.36		46124.6	1	1	
2167.99	2167.31		46125.7	1	1	
2167.453	2166.773	769 RM	46137.10	3	4	7
2166.925	2166.245	24C S	46148.34	2	2	9
2166.57	2165.89	861 RM-U	46155.9	3	5	42
2166.33	2165.65		46161.0	1	1	
2166.216	2165.536	537 RM	46163.45	2	2	15
2165.782	2165.102		46172.70	2	2	2
2165.226	2164.546	550 A*	46184.56	2	3	2
2165.07	2164.39	38C S	46187.9	1	1	

TABLE 3 - CONTINUED

WAVELENGTH		REMARKS	WAVENUMBER	NUMBER PLATES	NUMBER MEAS.	SPAN
VACUUM	AIR					
2164.543	2163.864	863 A*	46199.13	3	5	13
2164.067	2163.388	368 RM-U	46209.29	3	4	11
2162.944	2162.265	243 KRM	46233.28	3	3	8
2162.72	2162.04	023 D FE II	46238.1	2	3	48
2162.259	2161.580	580 A*	46247.93	3	5	13
2160.919	2160.240	236 RM	46276.61	2	2	24
2160.590	2159.911	92 RM	46283.65	3	3	4
2160.334	2159.655	658 A*	46289.14	3	5	14
2160.107	2159.428	425 RM	46294.00	3	4	5
2159.82	2159.14	13C S	46300.2	2	2	32
2159.596	2158.918	921 A*	46304.96	3	5	19
2159.41	2158.73	732 KRM	46308.9	1	1	
2159.36	2158.68	68C S	46310.0	1	1	
2159.31	2158.63	622 RM	46311.1	1	1	
2159.210	2158.532	49 RM-U	46313.23	3	3	6
2158.471	2157.793	795 A*	46329.09	3	4	6
2157.181	2156.503	504 KRM	46356.80	3	4	14
2156.50	2155.82	816 KRM	46371.4	2	2	30
2156.33	2155.65	64C S	46375.1	2	2	34
2155.913	2155.235	238 RM	46384.06	2	2	21
2155.701	2155.023	020 A*	46388.62	3	4	9
2155.157	2154.479	458 RM	46400.33	3	3	8
2154.81	2154.13	127 KRM	46407.8	1	1	
2152.485	2152.009	000 A*	46402.05	3	4	0
2152.935	2152.258		46448.22	2	3	15
2152.564	2151.887	90C S	46456.23	2	2	10
2152.38	2151.70	74C S	46460.2	3	5	30
2151.776	2151.099	099 RM	46473.24	3	4	10
2151.58	2150.90		46477.5	1	1	
2151.443	2150.766		46480.43	2	2	4
2150.861	2150.184	185 A*	46493.01	3	5	9
2150.30	2149.62	620 KRM	46505.1	1	1	
2149.857	2149.181	170 RM	46514.72	2	2	5
2149.19	2148.51	50 H	46529.2	1	1	
2149.14	2148.46		46530.2	1	1	
2149.09	2148.41	394 RM	46531.3	1	1	
2148.472	2147.796		46544.71	3	4	14
2147.720	2147.044	039 KRM	46561.00	3	3	7
2147.52	2146.84	806 KRM	46565.3	1	1	
2147.435	2146.759	74 S	46567.18	2	2	9
2146.96	2146.28		46577.5	1	1	
2146.37	2145.69		46590.3	1	1	
2146.25	2145.57		46592.9	1	1	
2145.866	2145.190	190 A*	46601.23	3	4	9
2145.26	2144.59	576 RM	46614.4	1	1	
2145.163	2144.487		46616.50	3	4	10
2144.577	2143.902	892 KRM	46629.24	2	2	22
2144.041	2143.366	369 KRM	46640.90	2	2	9
2143.50	2142.83	820 KRM	46652.7	1	1	
2142.822	2142.147		46667.43	2	2	9

TABLE 3 - CONTINUED

WAVELENGTH VACUUM	WAVELENGTH AIR	REMARKS	WAVENUMBER	NUMBER PLATES	NUMBER MEAS.	SPAN
2142.392	2141.717	719 A*	46676.80	3	5	10
2142.153	2141.478	471 KRM	46682.01	2	2	26
2141.76	2141.09	087 A	46690.6	1	1	
2140.602	2139.927		46715.83	3	3	17
2140.372	2139.697	699 A*	46720.85	3	5	11
2139.257	2138.583	593 A	46745.20	3	5	13
2138.70	2138.03	10C S	46757.4	1	1	
2137.62	2136.95		46781.0	1	1	
2136.625	2135.951	957 H	46802.78	3	3	66
2136.52	2135.85		46805.1	1	1	
2135.772	2135.098		46821.48	2	2	4
2135.43	2134.76		46829.0	1	1	
2133.991	2133.318	311 RM	46860.55	2	2	13
2132.693	2132.020	018 A*	46889.07	3	3	2
2131.647	2130.974	962 KRM	46912.08	3	5	15
2131.093	2130.420	417 RM	46924.28	2	2	2
2130.32	2129.65		46941.3	1	1	
2128.546	2127.874	863 KRM	46980.43	2	2	7
2128.15	2127.48	467 KRM	46989.2	1	1	
2127.48	2126.81		47004.0	1	1	
2127.28	2126.61		47008.4	1	1	
2126.881	2126.209	211 A	47017.21	2	2	4
2126.00	2125.33		47036.7	1	1	
2125.442	2124.991	213 KRM	47044.15	2	2	15
2125.17	2124.50	494 KRM	47055.1	1	1	
2124.808	2124.137		47063.08	2	3	9
2124.04	2123.37		47080.1	1	1	
2123.49	2122.82		47092.3	3	3	35
2122.848	2122.177	188 RM	47106.53	2	2	11
2122.553	2121.882	864 KRM	47113.08	2	2	14
2121.91	2121.24		47127.4	1	1	
2121.22	2120.55		47142.7	1	1	
2119.798	2119.128	125 RM	47174.31	2	2	14
2119.35	2118.68		47184.3	1	1	
2119.01	2118.34		47191.8	1	1	
2115.841	2115.171	170 A*	47262.53	3	5	12
2115.66	2114.99		47266.6	1	1	
2115.270	2114.600	600 A*	47275.29	3	4	6
2113.76	2113.09	08 RM	47309.1	1	1	
2113.640	2112.971	970 A*	47311.75	3	4	8
2112.68	2112.01		47333.2	1	1	
2111.901	2111.232	220 KRM	47350.70	2	2	5
2110.907	2110.238	233 RM	47373.00	3	5	5
2110.25	2109.58		47387.8	1	1	
2109.628	2108.960	960 A	47401.72	3	4	3
2108.960	2108.292	302 RM	47416.74	2	2	13
2108.90	2108.23	188 RM	47418.1	1	1	
2108.80	2108.13	137 A	47420.3	2	1	
2107.83	2107.16		47442.2	2	2	36
2107.34	2106.67		47453.2	1	1	

TABLE 3 - CONTINUED

WAVELENGTH VACUUM	AIR	REMARKS	WAVENUMBER	NUMBER PLATES	NUMBER MEAS.	SPAN
2107.063	2106.395	395 A*	47459.43	2	3	9
2106.927	2106.259	260 RM	47462.49	2	2	2
2106.74	2106.07		47466.7	1	1	
2104.634	2103.967	964 RM	47514.20	2	2	18
2104.05	2103.38		47527.4	1	1	
2103.721	2103.054	053 A*	47534.82	3	4	13
2103.595	2102.928	910 RM	47537.67	3	2	9
2103.023	2102.356	354 A*	47550.60	3	5	5
2101.466	2100.799	798 A*	47585.83	3	5	3
2101.29	2100.62		47589.8	1	1	
2100.810	2100.143	146 A*	47600.69	3	3	5
2100.41	2099.74		47609.8	1	1	
2100.34	2099.67		47611.3	1	1	
2099.604	2098.938	953 RM	47628.03	3	4	6
2099.40	2098.73	759 B	47632.7	1	1	
2098.87	2098.20		47644.7	1	1	
2098.82	2098.15		47645.8	1	1	
2098.783	2098.117	081 RM	47646.66	2	2	1
2098.63	2097.96		47650.1	1	1	
2098.11	2097.44		47661.9	1	1	
2097.27	2096.60		47681.0	1	1	
2096.136	2095.470	451 RM	47706.83	2	2	8
2094.70	2094.03		47739.5	1	1	
2094.354	2093.680	505 A*	47747.12	3	4	6
2092.36	2091.70		47792.9	1	1	
2091.522	2090.857	862 RM	47812.07	7	4	3
2091.29	2090.63		47817.4	1	1	
2091.050	2090.385	384 A*	47822.86	3	4	1
2090.79	2090.13		47828.8	1	1	
2090.54	2089.88		47834.5	1	1	
2089.80	2089.14		47851.5	1	1	
2089.26	2088.60		47863.8	1	1	
2088.171	2087.507	512 A*	47888.80	3	5	7
2088.00	2087.34		47892.7	1	1	
2087.69	2087.03		47899.9	1	1	
2086.37	2085.71		47930.1	1	1	
2085.91	2085.25		47940.7	1	1	
2084.786	2084.122	122 A*	47966.55	3	5	7
2078.17	2077.51	507 M2 FE I	48119.3	1	1	
2075.25	2074.59		48187.0	1	1	
2072.75	2072.09		48245.1	1	1	
2072.67	2072.01		48246.9	1	1	
2067.65	2066.99		48364.1	1	1	
2067.57	2066.91		48366.0	1	1	
2066.14	2065.48		48399.4	2	2	54
2064.49	2063.83		48438.1	1	1	
2064.41	2063.75		48440.0	1	1	
2058.76	2058.10	100 RM	48572.9	2	2	43
2055.53	2054.87		48649.3	1	1	
2047.902	2047.245	241 RM	48830.46	2	2	24

TABLE 3 - CONTINUED

WAVELENGTH VACUUM	WAVELENGTH AIR	REMARKS	WAVENUMBER	NUMBER PLATES	NUMBER MEAS.	SPAN
2044.35	2043.69		48915.3	1	1	
2044.27	2043.61		48917.2	1	1	
2041.33	2040.67	687 M2 FE II	48987.7	1	1	
2037.65	2037.00		49076.1	2	2	55
2036.371	2035.717		49106.97	2	2	21
2035.186	2034.532		49135.56	2	2	1
2034.86	2034.21		49143.4	2	2	56
2034.006	2033.352		49164.06	2	2	13
2032.32	2031.67		49204.8	2	2	44
2030.60	2029.95		49246.5	1	1	
2029.35	2028.70		49276.9	1	1	
2029.09	2028.44		49283.2	1	1	
2027.66	2027.01		49317.9	1	1	
2026.90	2026.25		49336.4	1	1	
2026.46	2025.81		49347.1	3	3	26
2026.11	2025.46		49355.7	3	3	43
2025.33	2024.68		49374.7	1	1	
2025.17	2024.52		49378.6	1	1	
2024.957	2024.305		49383.76	2	2	15
2024.728	2024.076		49389.35	3	3	6
2023.66	2023.01		49415.4	1	1	
2023.41	2022.76	776 M2 FE II	49421.5	3	3	52
2023.06	2022.41		49430.1	1	1	
2022.626	2021.976		49440.63	2	2	5
2022.32	2021.67		49448.2	1	1	
2022.07	2021.42		49454.3	1	1	
2021.91	2021.26		49458.2	1	1	
2021.764	2021.112		49461.76	3	2	11
2020.404	2019.752		49495.05	3	2	4
2019.71	2019.06		49512.1	1	1	
2017.76	2017.11	090 RM-U	49559.9	3	3	28
2017.172	2016.521	512 RM	49574.35	3	2	5
2016.409	2015.758		49593.11	3	2	10
2015.621	2014.970		49612.50	3	2	7
2014.86	2014.21		49631.2	1	1	
2014.09	2013.44		49650.2	1	1	
2012.58	2011.93		49687.5	3	3	31
2012.05	2011.40		49700.6	1	1	
2011.67	2011.02		49709.9	1	1	
2010.87	2010.22		49729.7	1	1	
2009.68	2009.03		49759.2	1	1	
2009.49	2008.84		49763.9	1	1	
2009.173	2008.523		49771.72	3	2	5
2008.896	2008.246		49778.58	3	3	19
2007.859	2007.210	215 RM-U	49804.29	3	2	5
2007.092	2006.443		49823.33	2	2	16
2006.876	2006.227		49828.69	3	2	6
2006.247	2005.598		49844.31	3	2	2
2005.95	2005.30		49851.7	1	1	
2005.11	2004.46		49872.6	3	3	47

TABLE 3 - CONTINUED

WAVELENGTH		REMARKS	WAVENUMBER	NUMBER PLATES	NUMBER MEAS.	SPAN
VACUUM	AIR					
2004.983	2004.334	881 M2 FE II	49875.73	2	2	9
2004.51	2003.86		49887.5	1	1	
2004.468	2003.819		49888.55	2	2	8
2004.23	2003.58		49894.5	1	1	
2003.310	2002.741		49915.39	3	2	6
2003.01	2002.36		49924.9	1	1	
2002.088	2001.440		49947.85	3	3	10
2001.331	2000.683		49966.75	3	3	5
2001.21	2000.56		49969.8	3	3	41
2000.21	1999.56		49994.8	2	2	30
1999.480			50013.00	2	2	7
1999.347			50016.33	2	2	24
1997.898			50052.61	3	3	14
1997.47			50063.3	1	1	
1997.19			50070.3	3	3	30
1996.038			50099.25	2	2	5
1995.405			50115.14	2	2	2
1994.800			50130.34	2	2	7
1994.574			50136.02	2	2	7
1992.599			50185.71	2	2	7
1992.14			50197.3	1	1	
1991.538			50212.45	3	3	15
1991.290			50218.70	2	2	16
1991.047			50221.33	2	2	2
1990.243			50245.12	2	2	1
1987.85			50305.6	1	1	
1987.19			50322.3	1	1	
1986.29			50345.1	1	1	
1984.62			50387.5	1	1	
1983.215			50423.18	2	2	6
1980.77			50485.4	1	1	
1980.59			50490.0	1	1	
1980.19			50500.2	1	1	
1979.206			50525.311	3	2	3
1978.85			50534.4	1	1	
1976.88			50584.8	1	1	
1976.18			50602.7	1	1	
1975.49			50620.4	1	1	
1975.172			50628.50	3	3	11
1974.058		059 RM*	50657.07	4	6	22
1973.905		911 RM*	50661.00	4	6	17
1972.103			50707.29	2	3	24
1970.764		771 RM*	50741.74	3	5	15
1967.727			50820.06	1	2	5
1967.122			50835.69	3	4	14
1966.568			50850.01	4	4	14
1965.641			50873.99	1	2	4
1965.06			50889.0	4	6	29
1964.052		043 RM*	50915.15	4	6	16
1963.627		629 RM*	50926.17	4	5	18

TABLE 3 - CONTINUED

WAVELENGTH VACUUM	REMARKS	WAVENUMBER	NUMBER PLATES	NUMBER MEAS.	SPAN
1963.119	110 RM*	50939.35	3	3	5
1962.871	871 RM*	50945.78	3	4	11
1962.696	746 RM	50950.33	2	2	2
1962.083	100 RM*	50966.24	3	4	14
1961.235	236 RM*	50988.28	4	5	16
1961.02	04 V	50993.9	3	4	62
1960.15	129 RM*	51016.5	5	7	26
1958.73	739 RM	51053.5	3	4	49
1958.61	598 RM*	51056.6	5	7	84
1957.843	831 RM*	51076.62	5	7	15
1956.036	026 RM*	51123.80	4	6	9
1955.687	690 RM*	51132.93	4	5	8
1952.999	997 RM*	51203.30	5	4	3
1952.583	596 RM*	51214.21	5	3	7
1952.257	262 RM*	51222.76	5	4	6
1951.558	556 RM*	51241.11	5	5	8
1950.623		51265.67	3	4	13
1950.218	223 RM*	51276.32	5	7	11
1949.588		51292.89	4	5	16
1949.13		51304.9	4	6	48
1946.957	978 RM*	51362.20	2	3	12
1946.804	85 V	51366.24	2	2	2
1946.217	219 RM*	51381.73	5	7	13
1945.261	294 RM*	51406.96	5	5	13
1945.087	070 RM*	51411.58	4	4	13
1941.380		51509.75	4	5	10
1940.646	649 RM*	51529.23	6	6	10
1939.725		51553.70	3	5	21
1937.259	274 RM*	51619.32	5	6	19
1934.927		51681.54	2	3	9
1934.526	528 RM*	51692.25	5	6	16
1933.794		51711.82	3	3	1
1931.405		51775.78	1	2	2
1930.895	888 S FE II	51789.46	2	2	6
1930.686		51795.06	4	2	2
1930.468		51800.91	3	4	14
1930.184	184 ES FE III	51808.53	2	2	2
1929.535		51825.96	2	3	13
1927.484	481 G FE II	51881.11	4	4	18
1926.64		51903.8	2	2	26
1926.012	983 W FE II	51920.76	2	2	14
1925.304		51939.85	3	3	2
1925.026		51947.35	2	2	5
1924.473		51962.28	2	2	18
1924.201		51969.62	4	5	9
1923.806		51980.29	2	2	8
1923.590		51986.13	2	2	18
1923.229		51995.89	2	2	7
1922.521		52015.04	3	5	25
1919.435		52098.66	1	2	4

TABLE 3 - CONTINUED

WAVELENGTH VACUUM	REMARKS	WAVENUMBER	NUMBER PLATES	NUMBER MEAS.	SPAN
1918.905		52113.05	2	2	4
1918.648		52120.03	2	3	8
1918.302		52129.44	2	3	5
1917.652		52147.10	2	2	2
1917.421	337 G FE II	52153.39	1	2	1
1913.225		52267.77	2	3	9
1912.378		52290.92	2	2	4
1911.057		52327.06	3	2	1
1910.489	53 V	52342.62	3	4	10
1910.150	150 G FE II	52351.91	3	4	7
1909.55		52368.4	1	1	
1908.759		52390.06	2	4	10
1904.378	402 ES FE III	52510.03	2	3	6
1903.815		52526.11	3	3	3
1903.383	37 RM*	52538.03	4	4	6
1902.291		52568.19	3	3	11
1899.199	21 KRM	52653.78	4	4	13
1898.735		52666.64	3	3	11
1898.275		52679.41	2	3	6
1898.05		52685.7	2	1	
1897.760		52693.70	2	2	0
1896.831		52719.50	3	3	5
1896.04	01 V	52741.5	2	4	30
1893.601	63 V	52807.44	2	3	8
1892.833		52830.86	3	3	6
1892.653		52835.89	3	3	5
1891.733	74 KRM	52861.58	3	4	5
1891.194	186 ES FE III	52876.65	2	3	8
1889.891	89 V	52913.10	5	6	18
1889.611		52920.95	4	4	9
1888.318	32 RM*	52957.18	4	4	10
1887.758	761 RM*	52972.89	5	6	9
1887.042		52992.99	2	2	17
1886.853		52998.30	2	2	0
1886.091	09 V	53019.71	4	5	14
1885.895		53025.22	4	4	5
1885.729		53029.89	4	6	22
1885.45		53037.7	1	1	
1885.157		53045.98	5	5	18
1884.651		53060.22	3	3	6
1883.930	91 KRM	53080.53	2	2	19
1883.795	78 V	53084.33	3	4	8
1882.033	047 ES FE III	53134.03	3	3	5
1881.313	31 V	53154.37	5	4	9
1880.135	14 RM*	53187.67	5	7	8
1879.887	86 V	53194.69	3	4	18
1879.375		53209.18	3	3	15
1878.844	849 RM*	53224.22	3	4	10
1878.056	06 V	53246.55	3	4	11
1877.513		53261.95	2	2	4

TABLE 3 - CONTINUED

WAVELENGTH VACUUM	REMARKS	WAVENUMBER	NUMBER PLATES	NUMBER MEAS.	SPAN
1877.151		53272.22	4	5	10
1876.415	421 RM*	53293.11	5	6	12
1876.138		53300.98	4	5	6
1875.918		53307.23	1	2	5
1875.545	536 M2 FE II	53317.84	4	6	16
1875.149	14 V	53329.10	4	6	13
1874.885		53336.60	4	5	14
1874.457		53348.78	2	2	4
1873.721		53369.74	2	4	5
1873.253	259 RM*	53383.07	4	4	4
1873.062	052 RM*	53388.52	3	3	11
1872.368	359 M2*	53408.30	4	5	14
1871.883	89 V	53422.14	5	5	10
1871.576		53430.91	5	5	18
1871.382		53436.44	2	3	12
1870.742	72 V	53454.73	3	5	16
1870.349	36 V	53465.96	4	4	7
1870.006		53475.76	5	4	4
1869.254		53497.28	5	6	12
1868.65		53514.6	1	1	
1868.436		53520.70	3	3	5
1867.282	27 V	53553.77	2	2	2
1866.811	815 M2*	53567.29	5	7	8
1866.090	07 M2*	53587.98	4	5	15
1865.614	606 ES FE III	53601.66	3	3	10
1865.312	30 KRM	53610.33	4	4	15
1864.766	743 M2 FE II	53626.03	5	4	13
1864.309		53639.18	1	2	4
1864.221		53641.71	2	2	3
1863.548	54 M2*	53661.08	5	5	13
1862.323	318 RM*	53696.38	4	6	14
1861.662	665 ES FE III	53715.44	3	4	12
1861.555		53718.53	1	2	10
1861.031		53733.66	3	4	14
1859.991		53763.70	4	5	16
1859.251	26 KRM	53785.10	4	5	10
1857.825		53826.38	4	3	7
1857.624		53832.21	4	4	9
1857.420		53838.12	4	3	10
1857.27		53842.5	2	1	
1856.929	928 S FE II	53852.36	4	5	8
1856.211	23 V	53873.19	5	7	11
1855.912		53881.87	3	4	12
1855.581	58 RM*	53891.48	4	5	13
1855.33		53898.8	3	4	23
1854.62		53919.4	2	2	25
1854.38	384 ES* FE III	53926.4	3	4	15
1854.17		53932.5	1	1	
1853.88		53940.9	3	2	29
1852.721		53974.67	1	2	5

TABLE 3 - CONTINUED

WAVELENGTH VACUUM	REMARKS	WAVENUMBER	NUMBER PLATES	NUMBER MEAS.	SPAN
1852.43	458 SA FE II	53983.1	3	4	20
1851.72		54003.8	3	4	41
1851.38	379 RZ*	54013.8	3	4	13
1851.27	261 ES* FE III	54017.0	3	4	36
1850.22	200 ES FE III	54047.6	2	2	18
1849.07		54081.2	1	1	
1848.86	883 ES FE III	54087.4	1	1	
1848.76	768 G* FE II	54090.3	1	1	
1848.58		54095.6	1	1	
1848.31		54103.5	3	4	60
1847.95		54114.0	3	4	20
1847.13		54138.0	1	2	15
1846.580	581 G* FE II	54154.2	1	2	3
1845.80		54177.1	1	1	
1845.55		54184.4	1	1	
1844.61	590 M2 FE II	54212.0	1	1	
1844.16		54225.2	1	1	
1844.09		54227.3	1	2	22
1843.56		54242.9	2	2	14
1843.503		54244.56	1	2	5
1843.03		54258.5	1	1	
1842.48		54274.7	1	1	
1842.00	988 SA FE II	54288.8	3	4	11
1841.57	575 RZ*	54301.5	3	4	38
1841.06		54316.5	2	3	49
1840.53		54332.2	1	1	
1839.69		54357.0	3	4	30
1836.10		54463.3	2	2	29
1835.91		54468.9	1	2	15
1835.66		54476.3	1	1	
1835.57		54479.0	1	2	41
1833.95		54527.1	1	1	
1833.872		54529.43	1	2	0
1833.54		54539.3	1	1	
1833.43		54542.6	2	2	4
1832.36		54574.4	1	1	
1832.27		54577.1	1	2	40
1831.89		54588.4	1	1	
1831.45		54601.5	1	1	
1831.347		54604.62	1	2	4
1830.80		54620.9	1	1	
1830.603		54626.81	1	2	6
1829.62		54656.2	1	1	
1829.44		54661.5	1	2	11
1829.34		54664.5	1	1	
1828.93		54676.8	1	1	
1828.86	857 ES FE III	54678.9	1	2	27
1828.55		54688.1	1	1	
1828.22		54698.0	1	1	
1827.98		54705.2	2	3	15

TABLE 3 - CONTINUED

WAVELENGTH VACUUM	REMARKS	WAVENUMBER	NUMBER PLATES	NUMBER MEAS.	SPAN
1827.82		54710.0	1	1	
1827.492		54719.80	1	2	2
1827.04		54733.3	1	1	
1826.925		54736.78	1	2	1
1826.51		54749.2	1	1	
1826.29		54755.8	1	1	
1826.20		54758.5	1	1	
1826.09		54761.8	1	2	21
1825.396		54782.63	2	2	3
1823.055		54853.00	1	2	10
1822.10		54881.7	1	2	34
1821.32		54905.2	1	1	
1821.262		54906.98	1	2	1
1820.67		54924.8	1	1	
1820.58		54927.6	1	2	23
1820.39		54933.3	2	3	24
1818.70		54984.3	1	1	
1818.42		54992.81	1	2	11
1818.28		54997.0	1	1	
1817.35		55025.2	1	2	17
1815.933		55068.11	2	2	7
1815.733		55074.18	1	2	3
1814.31		55117.4	1	2	17
1813.67		55136.8	1	2	22
1813.044		55155.86	1	2	8
1811.35		55207.4	1	1	
1810.16		55243.7	1	1	
1809.90		55251.7	1	1	
1808.986		55279.59	1	2	5
1808.81		55285.0	1	2	17
1807.95		55311.3	1	1	
1805.84		55375.9	1	2	14
1804.08	081 RZ*	55430.0	1	1	
1804.015		55431.91	1	2	7
1803.807		55438.30	1	2	2
1803.62		55444.1	1	2	49
1803.139		55458.84	1	2	3
1802.50		55478.5	1	2	19
1802.26		55485.9	1	1	
1802.21		55487.4	1	1	
1802.15		55489.3	1	1	
1801.75	766 ES* FE III	55501.6	1	2	19
1798.87		55590.5	1	2	33
1798.45		55603.4	1	1	
1798.37		55605.9	1	2	24
1797.92		55619.8	1	2	54
1797.41		55635.6	1	2	17
1796.71		55657.3	1	2	19
1796.12		55675.6	1	1	
1795.43		55697.0	1	1	

TABLE 3 - CONTINUED

WAVELENGTH VACUUM	REMARKS	WAVENUMBER	NUMBER PLATES	NUMBER MEAS.	SPAN
1795.31		55700.7	1	2	14
1794.83		55715.6	1	2	54
1794.45		55727.4	1	1	
1794.37		55729.9	1	2	35
1793.37	371 G* FE II	55760.9	1	1	
1792.33		55793.3	1	1	
1791.77		55810.7	1	2	61
1791.52		55818.5	1	1	
1791.31		55825.1	1	1	
1791.23		55827.6	1	1	
1790.41		55853.1	1	1	
1790.01		55865.6	1	2	18
1789.22		55890.2	1	2	15
1788.86		55901.5	1	2	38
1788.33		55918.1	1	1	
1788.273		55919.87	2	2	1
1787.78		55935.3	3	4	57
1786.56		55973.5	1	2	18
1785.948		55992.67	2	2	1
1785.591		56003.87	2	2	10
1785.440		56008.60	2	2	2
1785.500		56006.72	1	2	5
1784.56		56036.2	1	2	46
1784.18		56048.2	1	1	
1783.55		56068.0	1	1	
1783.04		56084.0	1	2	12
1782.92		56087.8	1	1	
1782.042		56115.40	1	2	8
1781.87		56120.8	1	2	18
1780.66		56159.0	1	1	
1780.54		56162.7	1	1	
1780.10		56176.6	1	1	
1778.89		56214.8	1	1	
1778.59		56224.3	2	3	18
1778.310		56233.17	1	2	3
1778.088		56240.19	1	2	5
1777.78		56249.9	1	1	
1777.39		56262.3	1	1	
1777.14		56270.2	1	1	
1777.030		56273.67	2	2	2
1776.31		56296.5	1	1	
1775.66		56317.1	3	4	48
1775.09		56335.2	2	3	15
1775.02		56337.4	1	1	
1774.38		56357.7	1	1	
1774.13		56365.7	3	4	17
1773.594	594 RZ*	56382.69	3	4	10
1772.51	518 G FE II	56417.2	1	1	
1771.49		56449.7	3	4	26
1771.37		56453.5	1	1	

TABLE 3 - CONTINUED

WAVELENGTH VACUUM	REMARKS	WAVENUMBER	NUMBER PLATES	NUMBER MEAS.	SPAN
1771.01		56465.0	1	1	
1770.52		56480.6	1	1	
1770.00		56497.2	3	3	22
1769.29		56519.8	3	4	38
1769.02		56528.5	1	1	
1768.80	805 RZ*	56535.5	3	4	18
1768.54		56543.8	1	1	
1768.27		56552.4	1	1	
1767.96		56562.4	2	3	40
1767.31		56583.2	1	1	
1766.56		56607.2	2	3	14
1765.47		56642.1	2	3	13
1765.196		56650.93	2	3	3
1764.36		56677.8	2	2	31
1764.13	118 G* FE II	56685.2	1	1	
1763.62		56701.6	2	2	45
1763.50		56705.5	1	2	55
1763.098		56718.34	2	3	4
1762.86		56726.0	2	3	39
1762.238		56746.02	2	3	10
1761.91		56756.6	2	3	14
1761.57		56767.5	2	3	12
1761.30		56776.2	1	1	
1760.653		56797.12	2	2	7
1759.47		56835.3	2	2	22
1759.15		56845.6	2	2	24
1758.61		56863.1	2	3	19
1758.05		56881.2	2	3	27
1756.80		56921.7	2	3	20
1754.63		56992.1	2	3	13
1754.53		56995.3	1	1	
1754.27		57003.8	2	2	35
1753.975		57013.36	2	3	10
1753.482		57029.38	2	2	0
1751.185	183 RZ*	57104.19	2	2	1
1750.36		57131.2	2	2	80
1750.09		57140.1	2	2	110
1749.87		57147.1	2	2	60
1749.50		57159.5	2	2	110
1747.78		57215.7	2	2	90
1747.17		57235.3	1	1	
1746.91		57243.8	1	1	
1746.57		57255.2	1	1	
1745.64		57285.6	2	2	80
1745.50		57290.1	1	1	
1744.61		57319.4	2	2	80
1744.19		57333.1	2	2	40
1744.06		57337.5	2	2	70
1743.04		57371.0	2	2	60
1741.96		57406.7	2	2	50

TABLE 3 - CONTINUED

WAVELENGTH VACUUM	REMARKS	WAVENUMBER	NUMBER PLATES	NUMBER MEAS.	SPAN
1741.63	574 M2 CU II	57417.8	2	2	70
1741.21		57431.5	2	2	30
1739.43		57490.4	2	2	70
1739.24		57496.5	2	2	80
1738.20		57530.9	2	2	40
1737.26		57561.9	2	2	40
1736.95		57572.3	2	2	50
1736.57	54 M2 CU II	57584.7	1	1	
1735.94		57605.6	2	2	40
1735.68		57614.6	2	2	10
1735.49		57620.5	1	1	
1734.42		57656.3	2	2	20
1733.75		57678.5	2	2	40
1732.98		57704.2	2	2	30
1732.62		57716.2	2	2	50
1732.30	253 M2* FE II	57726.7	2	2	40
1731.57		57751.2	2	2	50
1731.09	038 M2* FE II	57767.2	2	2	30
1730.01		57803.3	2	2	30
1729.53		57819.2	1	1	
1728.69		57847.4	2	2	30
1727.08		57901.2	2	2	20
1726.82		57909.9	2	2	40
1726.09		57934.3	1	1	
1725.38	402 M2* FE II	57958.2	1	1	
1724.57		57985.6	2	2	10
1724.33		57993.7	2	2	20
1724.03		58003.7	2	2	40
1723.89		58008.5	1	1	
1723.57		58019.2	2	2	20
1722.97			58039.3	2	2
1722.62	62 M2 V II	58051.1	2	2	0
1722.37		58059.5	2	2	0
1721.93		58074.6	2	2	10
1721.02		58105.1	1	1	
1720.22		58132.1	2	2	0
1719.88		58143.6	1	1	
1718.91		58176.3	1	1	
1718.61		58186.8	2	2	10
1718.16	123 M2* FE II	58201.9	2	2	10
1716.96		58242.6	2	2	10
1716.46		58259.5	2	2	0
1715.97		58276.1	2	2	80
1715.62		58287.8	1	1	
1715.33		58297.9	2	2	0
1714.90		58312.3	2	2	20
1714.51		58325.7	2	2	20
1713.83		58348.7	2	2	60
1713.47		58361.1	1	1	
1713.29		58367.3	2	2	30

TABLE 3 - CONTINUED

WAVELENGTH VACUUM	REMARKS	WAVENUMBER	NUMBER PLATES	NUMBER MEAS.	SPAN
1712.78		58384.7	2	2	0
1711.87		58415.9	2	2	10
1711.20		58438.7	2	2	10
1710.72		58454.9	2	2	0
1710.45		58464.4	2	2	10
1709.92		58482.4	2	2	10
1709.13		58509.4	1	1	
1708.46		58532.3	2	2	40
1707.98		58548.9	2	2	30
1706.82		58588.3	1	1	
1706.74		58591.4	2	2	30
1705.83		58622.6	2	2	70
1705.38		58637.9	2	2	20
1704.86	862 M2 MN II	58655.7	2	2	20
1704.44	44 M2 SI I	58670.4	2	2	10
1704.17		58679.7	1	1	
1703.91		58688.7	1	1	
1703.68		58696.5	1	1	
1703.46		58704.1	2	2	100
1703.26		58711.1	2	2	30
1702.83	81 M2 SI I	58725.9	2	2	10
1702.58		58734.6	2	2	30
1702.45		58739.0	2	2	0
1701.62		58767.8	2	2	10
1701.32		58777.7	1	1	
1700.97		58789.9	1	1	
1700.49		58806.7	2	2	40
1699.14	199 M2* FE II	58853.4	2	2	2
1698.51		58875.1	1	1	
1697.34		58915.6	1	1	
1697.14		58922.6	1	1	
1696.65		58939.8	1	1	
1695.43		58982.2	1	1	
1694.93		58999.4	2	2	0
1694.51		59014.2	1	1	
1693.93	936 E* FE II	59034.2	1	1	
1692.98		59067.4	2	2	80
1692.29		59091.6	2	2	80
1691.98		59102.5	2	2	50
1690.87		59141.0	2	2	40
1690.44		59156.3	2	2	30
1689.76	821 M2* FE II	59180.2	2	2	50
1689.39		59193.2	2	2	30
1688.30		59231.3	2	2	10
1687.98		59242.4	2	2	40
1687.65		59254.1	2	2	80
1687.10	06 M2 SI I	59273.4	1	1	
1686.52	457 M2* FE II	59294.0	2	2	10
1685.91	953 M2* FE II	59315.2	2	2	40
1685.64	682 M2 CU I	59325.0	2	2	50

TABLE 3 - CONTINUED

WAVELENGTH VACUUM	REMARKS	WAVENUMBER	NUMBER PLATES	NUMBER MEAS.	SPAN
1685.37		59334.2	1	1	
1685.17		59341.3	1	1	
1684.84		59352.8	2	2	40
1684.54		59363.3	2	2	20
1684.30		59371.9	2	2	20
1683.59		59396.8	1	1	
1683.40		59403.5	1	1	
1683.13	15 M2 CU II	59413.2	1	1	
1683.04		59416.2	1	1	
1682.83		59423.8	2	2	40
1682.50		59435.5	2	2	100
1682.14		59448.1	1	1	
1681.50		59470.7	2	2	40
1681.32		59477.0	1	1	
1680.46		59507.5	2	2	40
1680.16		59518.2	2	2	40
1679.84		59529.5	2	2	20
1679.15		59554.2	2	2	30
1678.65		59571.8	2	2	10
1677.71		59605.0	1	1	
1677.48		59613.3	1	1	
1676.82	80 M2 SI I	59636.7	1	1	
1676.25		59657.1	2	2	60
1675.99		59666.2	2	2	20
1675.44		59685.7	1	1	
1675.04		59700.1	1	1	
1674.95		59703.3	1	1	
1674.27	258 M2* FE II	59727.5	1	1	
1673.16		59767.3	1	1	
1672.68	60 M2 SI I	59784.4	1	1	
1672.43	44 M2 V II	59793.4	1	1	
1671.90		59812.2	1	1	
1671.55		59824.6	2	2	20
1671.12	11 M2 SI I	59840.0	1	1	
1670.74	759 M2* FE II	59853.6	1	1	
1670.41		59865.6	1	1	
1669.67		59892.0	1	1	
1668.95		59918.1	1	1	
1668.28		59941.9	1	1	
1667.58	63 M2 SI I	59967.1	1	1	
1666.92		59991.0	1	1	
1665.97		60025.0	1	1	
1665.73		60033.8	1	1	
1665.09		60056.8	1	1	
1664.86		60065.0	1	1	
1664.49	54 M2 SI I	60078.4	1	1	
1664.04		60094.7	1	1	
1662.33	369 M2* FE II	60156.6	1	1	
1661.79		60176.1	1	1	
1660.35		60228.3	1	1	

TABLE 3 - CONTINUED

WAVELENGTH VACUUM	REMARKS	WAVENUMBER	NUMBER PLATES	NUMBER MEAS.	SPAN
1659.63		60254.4	1	1	
1659.02		60276.4	1	1	
1658.82	785 M2* FE II	60284.0	2	2	10
1658.42		60298.4	1	1	
1658.28		60303.5	1	1	
1658.15	113 M2 CI	60308.2	1	1	
1657.90	891 M2 CI	60317.5	2	2	10
1657.40	368 M2 CI	60335.3	1	1	
1657.18		60343.7	2	2	30
1656.23	235 M2 CI	60378.1	1	1	
1655.37		60409.3	1	1	
1655.14	042 M2 FE II	60417.9	1	1	
1653.96		60461.1	1	1	
1652.67		60508.1	1	1	
1652.22		60524.7	2	2	50
1651.66		60545.2	2	2	20
1651.30		60558.5	2	2	30
1650.99		60570.0	2	2	10
1650.73	709 M2* FE II	60579.5	2	2	10
1650.39		60591.9	2	2	20
1649.96		60607.7	2	2	10
1649.33		60630.8	2	2	20
1648.57		60658.5	1	1	
1648.28		60669.5	2	2	10
1647.82		60686.3	1	1	
1647.29		60705.9	1	1	
1646.94		60718.7	2	2	20
1646.04		60751.7	2	2	20
1645.74		60762.9	1	1	
1645.59		60768.6	2	2	20
1645.38		60776.4	2	2	30
1644.60		60805.1	1	1	
1643.93		60830.0	1	1	
1642.74		60873.9	2	2	0
1642.16	187 M2* FE II	60895.5	2	2	0
1641.17		60932.0	1	1	
1641.03		60937.4	1	1	
1640.44		60959.4	1	1	
1640.11	167 M2* FE II	60971.3	1	1	
1639.13	13 M2 V II	61008.1	1	1	
1638.68		61024.8	2	2	40
1638.45		61033.2	1	1	
1637.44	400 M2* FE II	61071.3	2	2	50
1637.19		61080.3	1	1	
1636.74		61097.3	2	2	50
1636.49		61106.6	1	1	
1636.36	334 M2* FE II	61111.5	2	2	10
1635.86	86 M2 V II	61130.0	2	2	30
1635.43	389 M2* FE II	61145.8	1	1	
1634.98		61162.8	1	1	

TABLE 3 - CONTINUED

WAVELENGTH VACUUM	REMARKS	WAVENUMBER	NUMBER PLATES	NUMBER MEAS.	SPAN
1634.63		61176.0	2	2	80
1634.30	353 M2 FE III	61188.3	2	2	40
1633.84		61205.6	2	2	80
1633.52	51 M2 V II	61217.6	2	2	40
1632.25		61265.0	1	1	
1632.10		61270.9	1	1	
1631.43		61296.0	1	1	
1631.08	124 M2* FE II	61309.0	1	1	
1630.35	27 M2 CU II	61336.5	2	2	120
1629.64		61363.1	2	2	60
1629.41	376 SA FE II	61372.1	2	2	10
1629.11	155 M2 FE II	61383.4	2	2	50
1628.62		61401.6	1	1	
1628.40		61409.9	1	1	
1628.19		61417.9	1	1	
1628.04		61423.6	1	1	
1627.42		61447.1	2	2	100
1627.17	03 M2 SI I	61456.4	2	2	100
1626.75		61472.3	2	2	80
1625.94	919 M2* FE II	61502.8	2	2	80
1625.60	525 M2 FE II	61515.6	1	1	
1625.07		61536.1	2	2	90
1624.65		61551.7	2	2	80
1624.28		61565.8	1	1	
1624.00		61576.5	1	1	
1623.62		61590.7	1	1	
1623.16	102 M2* FE II	61608.3	1	1	
1622.96	87 M2 SI I	61616.0	2	2	110
1622.71		61626.0	2	2	50
1622.19		61645.1	1	1	
1622.05		61650.4	1	1	
1621.86		61657.6	1	1	
1621.73	685 M2* FE II	61662.5	1	1	
1621.16		61684.4	1	1	
1620.32	39 M2 SI I	61716.2	1	1	
1619.90		61732.3	1	1	
1619.71		61739.3	1	1	
1615.23		61910.8	1	1	
1614.33		61945.4	2	2	30
1614.11		61953.8	1	1	
1613.88		61962.7	2	2	130
1613.01		61995.7	1	1	
1611.53		62052.8	2	2	160
1611.22	113 M2 CU II	62064.8	2	2	150
1609.89		62116.2	2	2	170
1609.18		62143.5	1	1	
1607.04		62226.2	1	1	
1605.72		62277.5	2	2	0
1605.02		62304.7	1	1	
1604.62		62320.0	1	1	

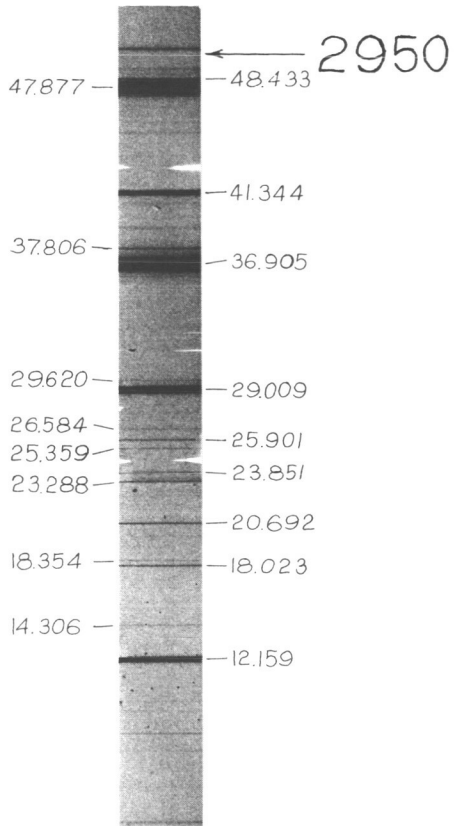
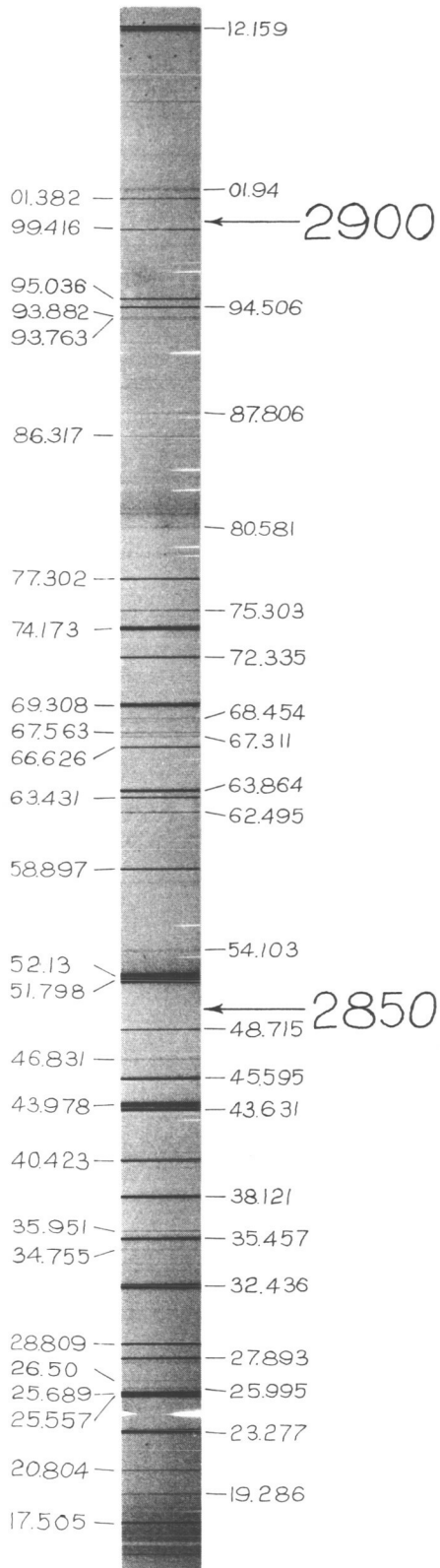
TABLE 3 - CONTINUED

WAVELENGTH VACUUM	REMARKS	WAVENUMBER	NUMBER PLATES	NUMBER MEAS.	SPAN
1603.96		62345.7	2	2	100
1601.08		62458.0	1	1	
1600.90		62464.9	1	1	
1600.77		62469.9	1	1	
1600.54		62479.0	1	1	
1598.16		62572.0	1	1	
1596.84		62623.6	1	1	
1595.95	82 M2 SI I	62658.5	1	1	
1594.93	92 M2 SI I	62698.7	1	1	
1594.19		62727.6	1	1	
1593.31		62762.3	1	1	
1591.77	803 KY FE III	62822.9	1	1	
1591.37		62838.9	1	1	
1591.12	17 M2 SI I	62849.0	1	1	
1589.82		62900.1	1	1	
1588.26	295 M2* FE II	62961.8	1	1	

TABLE 4

Analysis of Measurements

Wavelength Differences Å	Region 1 2950-2084 Å (per cent)	Number lines	Region 2 2084-1855 Å (per cent)	Number lines	Region 3 1855-1751 Å (per cent)	Number lines
.000 - .003	33.7	257	25.3	22	36.8 +	7
.004 - .006	19.3	147	14.9	13	15.8 +	3
.007 - .010	14.4	110	18.4	16	10.5	2
>.010	32.6	248	41.4	36	36.8 +	7
Total:	100.0	762	100.0	87	100.0	19



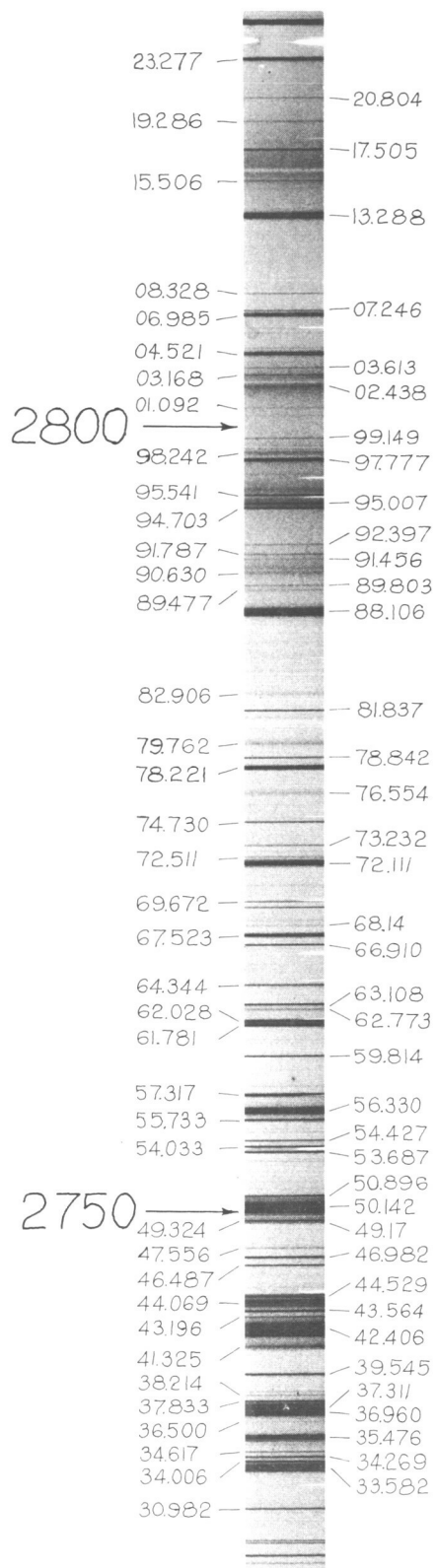
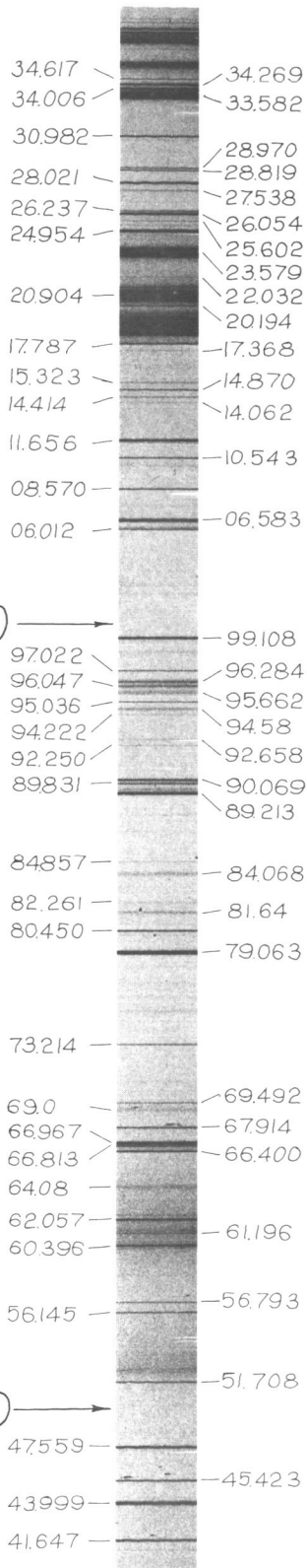
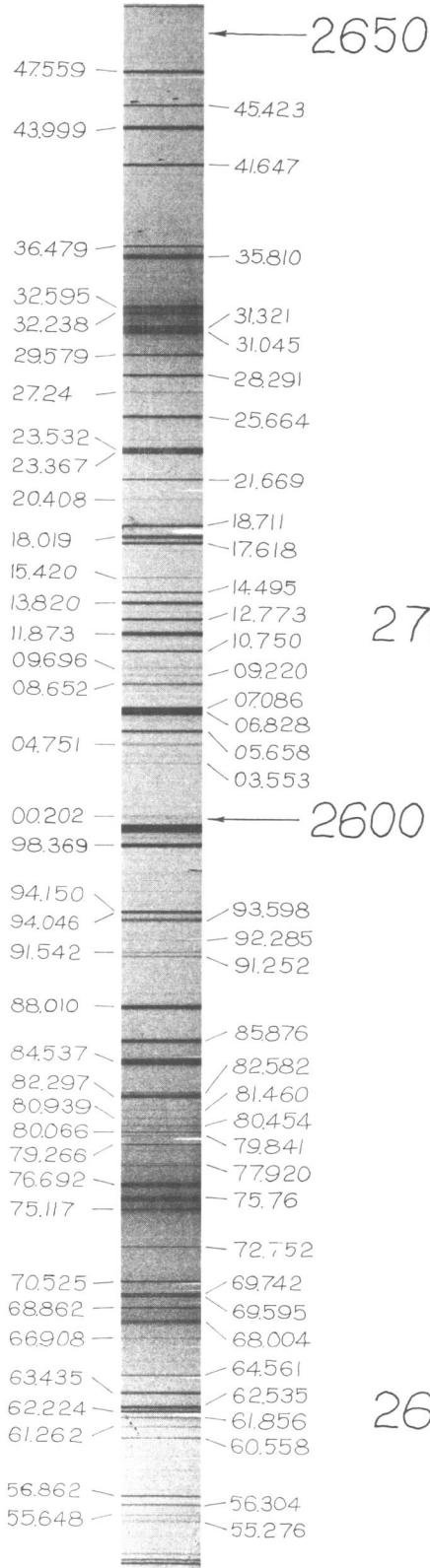
Fe

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2950 - 2825

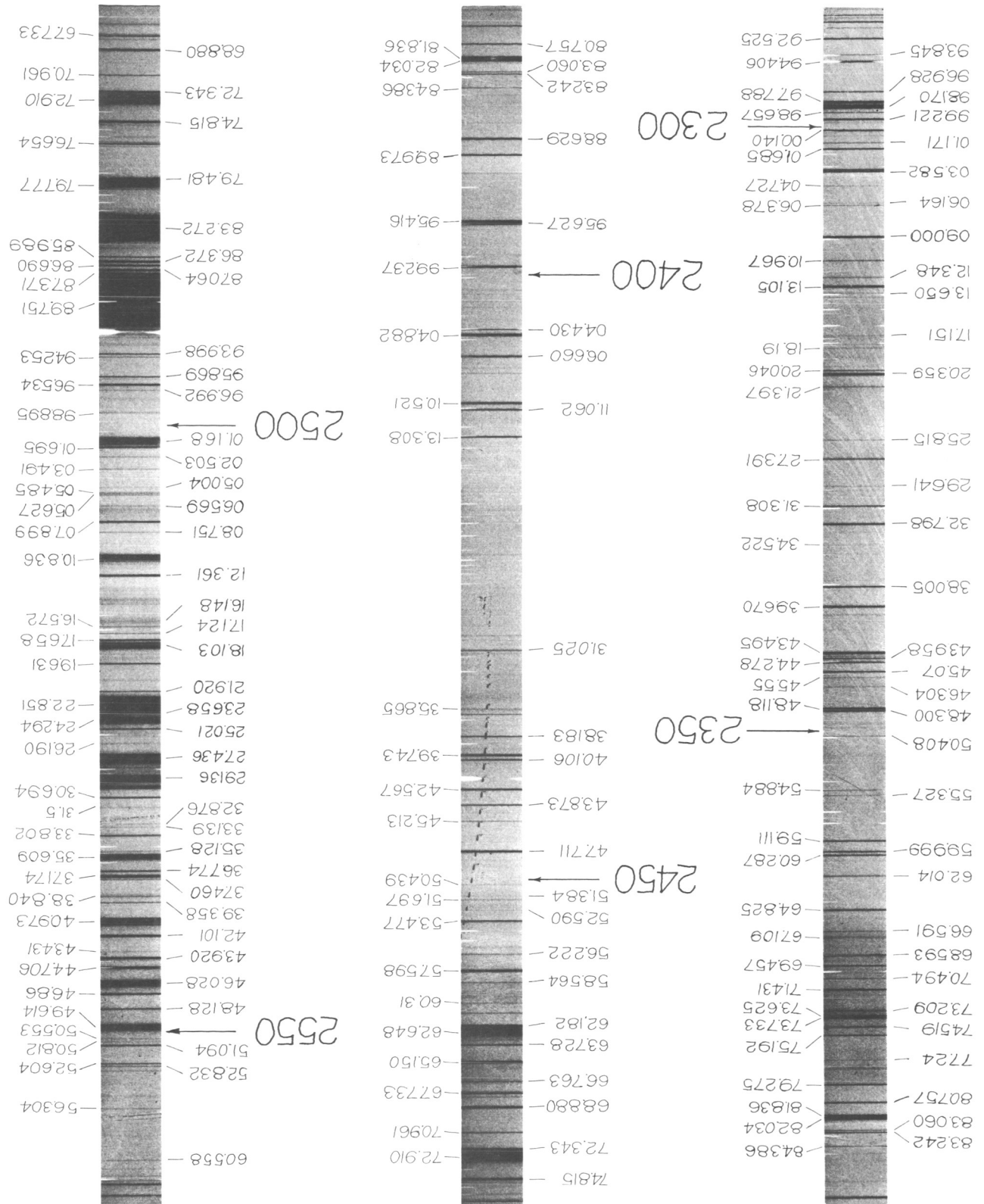
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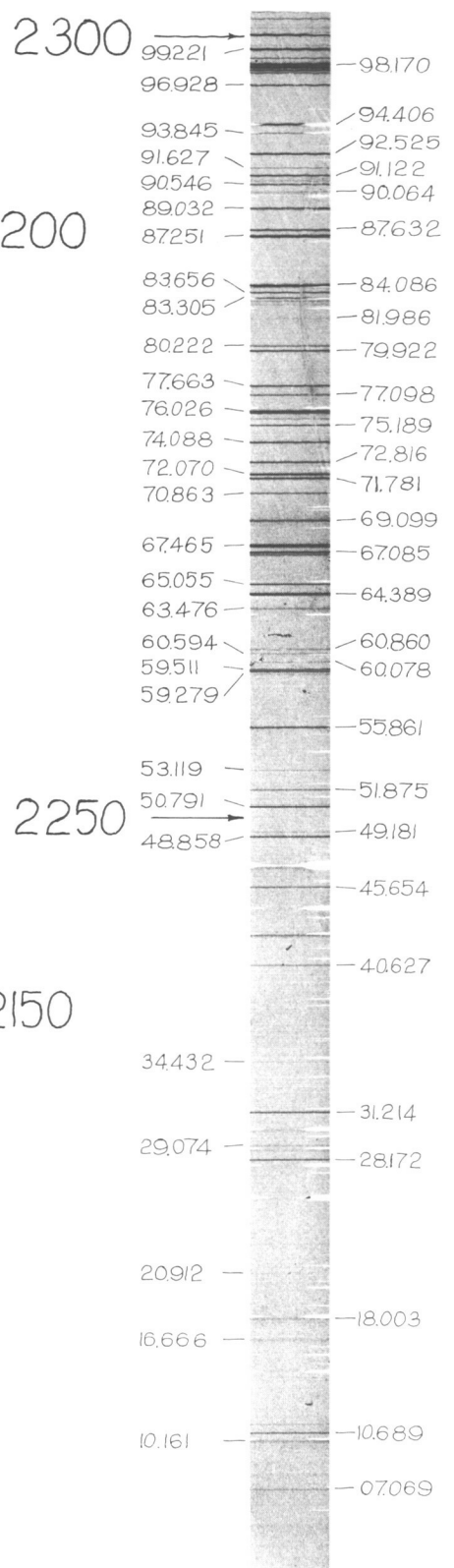
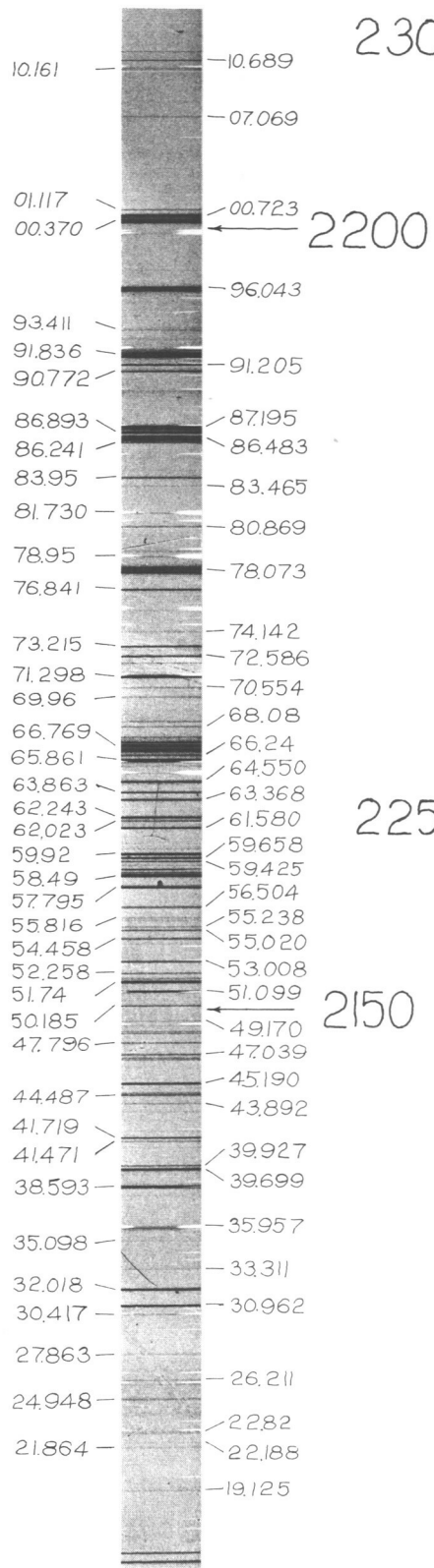
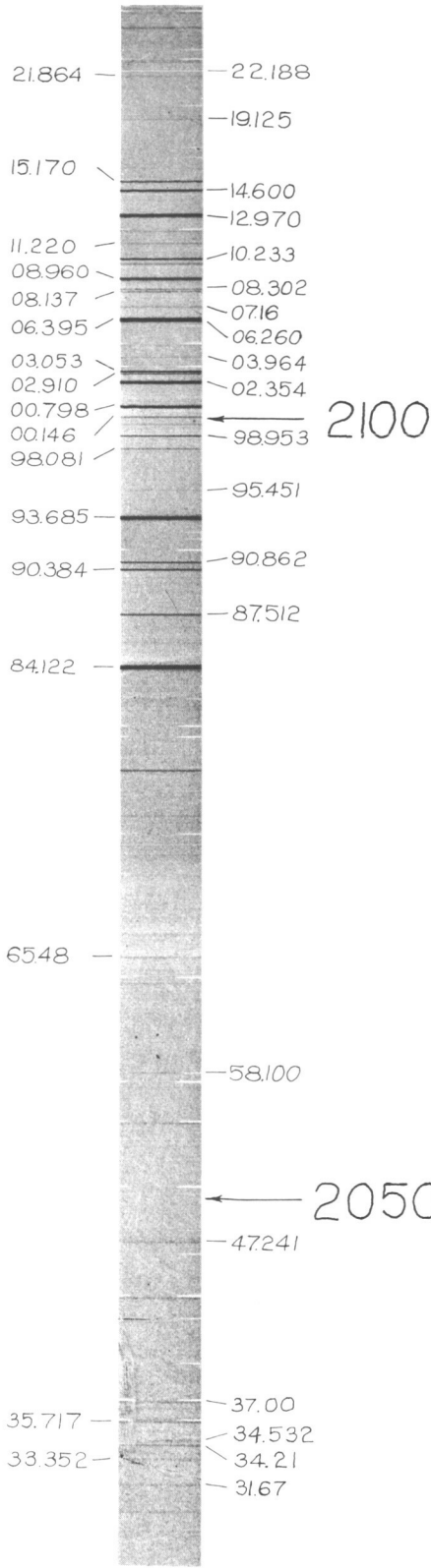
Fe



Fe 2
2825 - 2550
2 Fe

Fe 3 2550 - 2300 3 Fe



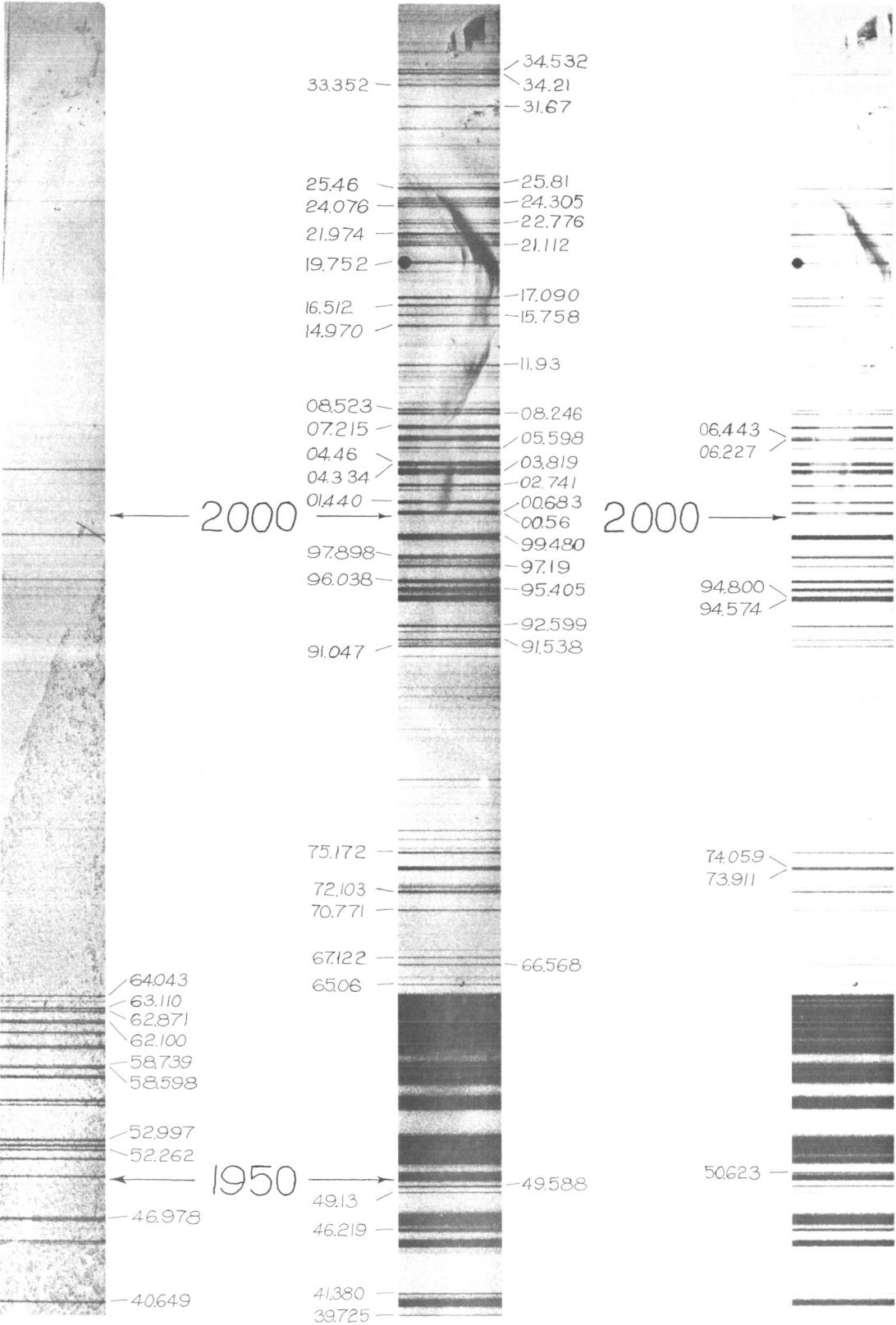


Fe
4
2300 - 2025
4
Fe

Fe 5

2025-1950

5 Fe



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1950

1900

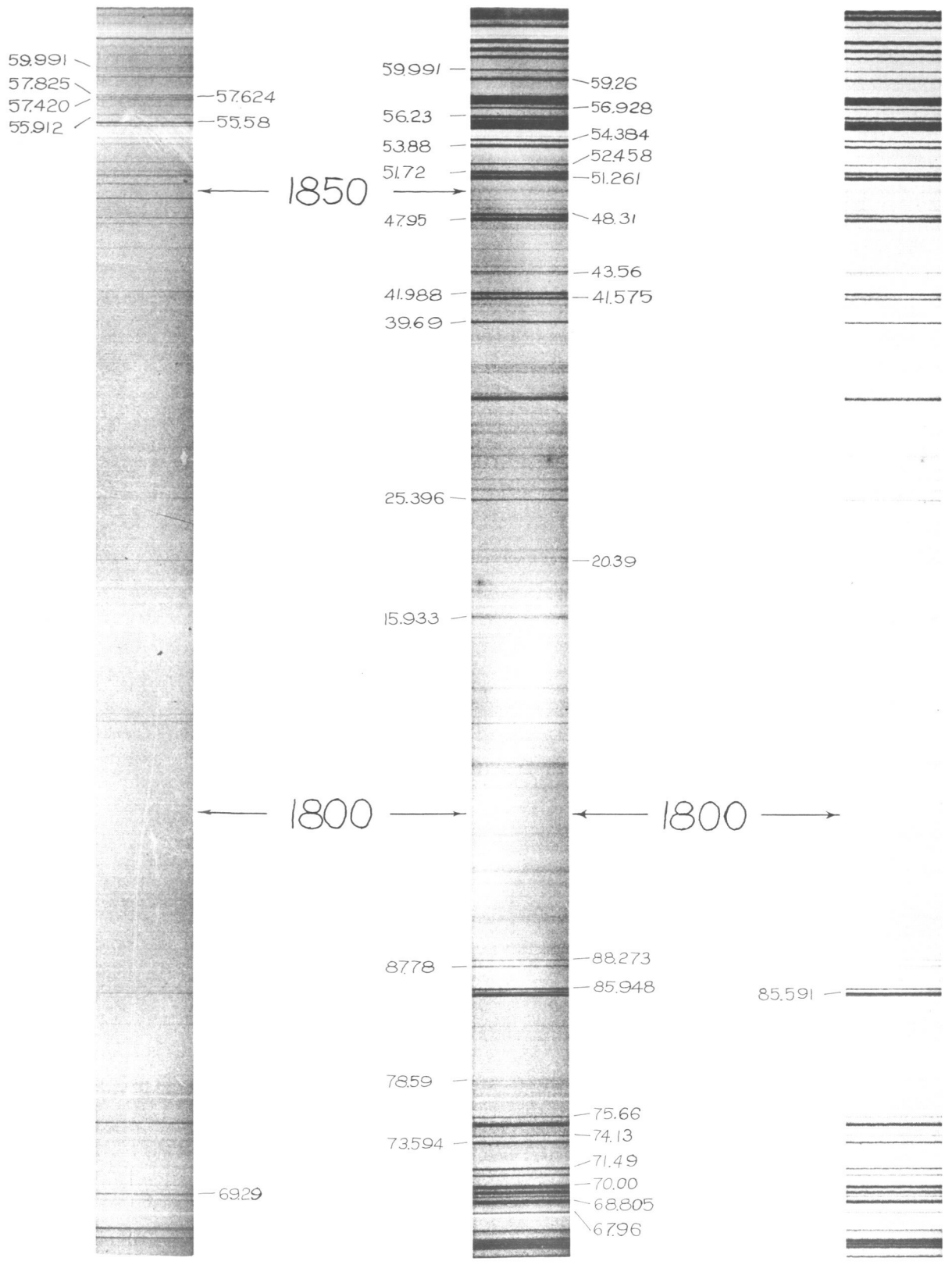
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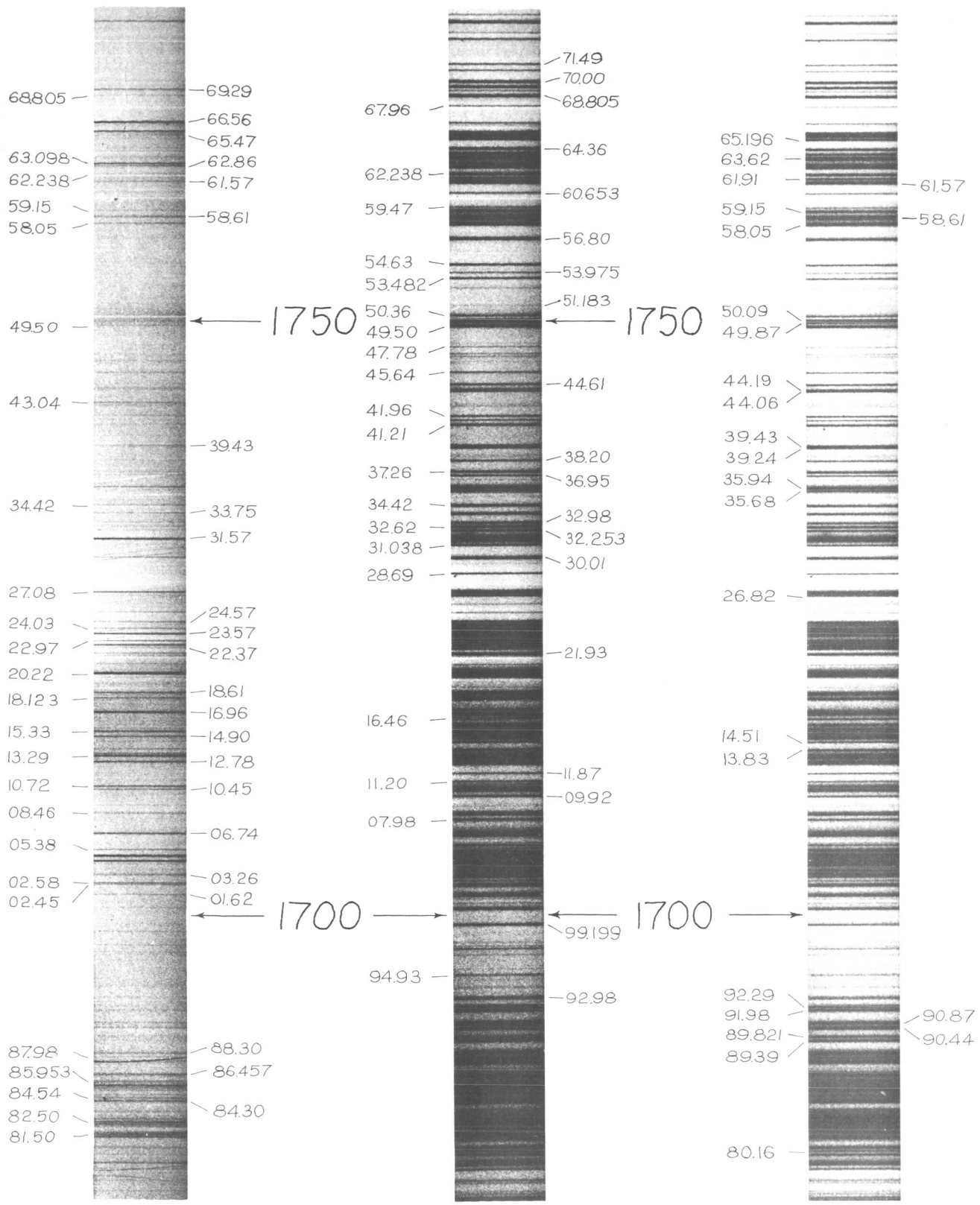
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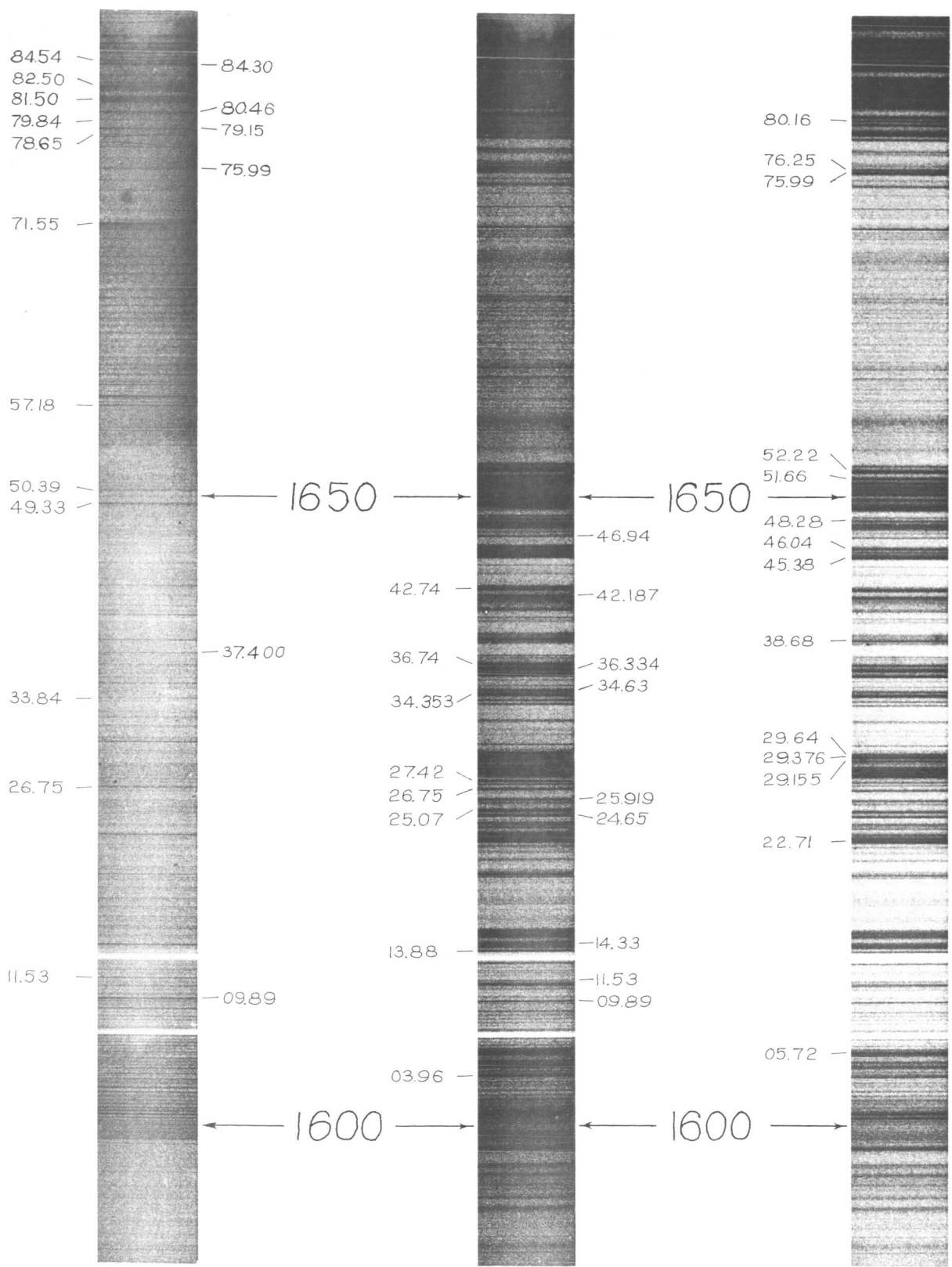
Fe
6
1950-1850
6
Fe



Fe	7	1850-1775	7	Fe
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Fe
8
1775-1675
8
Fe



Fe 9 1675-1600 9 Fe