VI. *Corrections to the Computed Lengths of Waves of Light published in the Philosophical Transactions of the year* 1868. *By* GEORGE BIDDELL AIRY, *C.B., Astronomer Royal.*

IN a paper communicated to the Royal Society in the year 1867, and printed in the Philosophical Transactions for 1868, I attempted the computation of the Lengths of Waves of Light for all the lines which KIRCHHOFF had observed in the Solar Spectrum, by adopting an algebraical formula of the fifth order, and substituting in it for every spectral line the value of KIRCHHOFF's measure for that line, the numerical bases of the formula being derived from FRAUNHOFER's and DITSCHEINER's measures of the wave-lengths for six principal lines. Subsequently I obtained the means of comparing many of my computed results with measures of wave-lengths by ÅNGSTRÖM and DITSCHEINER, and I found that the discordances were far larger than I had anticipated. I remarked, however, "By means of the comparison . . . . . there is no difficulty in computing for any other line the correction that ought to be applied to the wave-length in the principal Tables, in order to exhibit the true wave-lengths on DITSCHEINER's scale, without appreciable error."

Want of leisure long prevented me from entering upon the examination necessary for preparing, in a form easy for applications, the correction which my numbers required. Lately, however, I have taken it up; and I have constructed a Table of corrections to the numbers of my Table generally, and I have applied them, both to the general Table of wave-lengths and to the values of wave-lengths for the spectral lines of the atmosphere and several metals (the accurate exhibition of which was, in fact, the first object of my computations). I now offer these corrections and corrected numbers for the acceptance of the Royal Society.

The work of comparison and correction was conducted by a graphical process. For this, I refer to the diagram (Plate XII.), premising the following explanations:—The abscissa-measures are the computed numbers for Wave-lengths in the Philosophical Transactions, 1868. The Ordinate-measures are the corrections required to make these computed numbers agree with observed wave-lengths. The crosses represent the corrections required by ÅNGSTRÖM; and the dots represent the corrections required by DITSCHEINER.

My first step was, adopting my computed numbers as a line of abscissæ, to mark the values of the discordances ("ÅNGSTRÖM—computed numbers" and "DITSCHEINER—computed numbers") as ordinates. The points thus determined for the two experimenters were placed on the same sheet of paper, but were distinctively marked. The result of

comparison of them was the following :—From G (wave-length about 0·00043000 millim.) to F (49000), although the required corrections are very large, there is no sensible doubt on their value; and the measures of Ångström and Ditscheiner, where they are comparable, agree closely. As far as 49400, their accord is good; from that point to about 51600, Ditscheiner only has given measures. From 51600 to 54000 their measures begin to diverge, and from that point to 56000 they are irreconcilable. Single observations of each at 59000 (D) agree fairly, and they support this inference from Ditscheiner's measures, that, whatever be the principle adopted in drawing the final curve, there must be a cusp at D. I conceive, therefore, that Kirchhoff made some important change in the adjustments of his apparatus at that point. From 61000 to 62000 the two systems of measure cannot be reconciled. Near 65800 (at C) the disagreement, though smaller, is too large, and near 68900 (at B) it is much larger. After this, the only measure is one by Ångström, for A.

From this statement it will appear that the adoption of a correction-curve is by no means a straightforward process. In the following steps I have been guided in great measure by the wish to make as few sinuosities as possible. From G to a point beyond E (about 54000) there is no general difficulty, and I have given nearly equal values to the two series of points. From 54000 to the cusp at D, and again from the cusp at D to C, I have abandoned Ångström entirely, the points of Ditscheiner giving very good curves. But I cannot very well introduce Ditscheiner's one remaining measure (that at B), and I have continued my curve through Ångström's two last points, for B and A.

I need not explain to any person who has had much familiarity with operations of this kind, how great has been the advantage of possessing, as basis of comparison, a series of numbers computed on a continuous formula, even though that formula be inaccurate.

Having thus adopted my curve, I measured its ordinates for every 500 in the final figures of the subdivisions of millimetres represented by 0·00000001 millim. In order to extend the Table so as to give the results for every 100 in the final figures, it was necessary, after giving due attention to the progress of the differences preceding and following that difference which is to be divided into five parts, to decide on values of correction which would produce an harmonious flow in the second differences at the reduced intervals. No great difficulty, however, was found in this process. The Table thus formed of corrections to the wave-lengths printed in the Philosophical Transactions, 1868, is the following.

Corrections to the Computed Wave-Lengths in the Table, Philosophical Transactions, 1868, pages 37 to 50.

Computed wave-length, m.m. 0·000.	Correction.	Computed wave-length, m.m. 0·000.	Correction.	Computed wave-length, m.m. 0·000.	Correction.	Computed wave-length, m.m. 0·000.	Correction.	Computed wave-length, m.m. 0·000.	Correction.	Computed wave-length, m.m. 0·000.	Correction.	Computed wave-length, m.m. 0·000.	Correction.
42500	+335	476	−518	527	− 7	578	+ 97	629	+70	68000	− 66	731	−262
426	+281	477	−476	528	− 10	579	+ 93	63000	+67	681	− 70	732	−266
427	+227	478	−432	529	− 11	58000	+ 87	631	+65	682	− 73	733	−270
428	+173	479	−385	53000	− 12	581	+ 81	632	+62	683	− 77	734	−275
429	+119	48000	−337	531	− 11	582	+ 74	633	+59	684	− 80	73500	−279
43000	+ 65	481	−291	532	− 10	583	+ 67	634	+57	68500	− 84	736	−283
431	+ 11	482	−244	533	− 7	584	+ 59	63500	+55	686	− 88	737	−287
432	− 43	483	−198	534	− 2	58500	+ 50	636	+53	687	− 91	738	−292
433	− 97	484	−151	53500	+ 5	586	+ 42	637	+51	688	− 95	739	−296
434	−152	48500	−105	536	+ 12	587	+ 33	638	+49	689	− 99	74000	−300
43500	−207	486	− 62	537	+ 20	588	+ 23	639	+47	69000	−103	741	−304
436	−261	487	− 20	538	+ 29	589	+ 12	64000	+46	691	−107	742	−309
437	−315	488	+ 21	539	+ 37	59000	0	641	+44	692	−111	743	−313
438	−368	489	+ 61	54000	+ 44	591	+ 7	642	+43	693	−115	744	−318
439	−420	49000	+ 91	541	+ 51	592	+ 14	643	+41	694	−119	74500	−323
44000	−470	491	+120	542	+ 58	593	+ 21	644	+39	69500	−123	746	−328
441	−520	492	+142	543	+ 65	594	+ 28	64500	+37	696	−126	747	−333
442	−570	493	+162	544	+ 72	59500	+ 35	646	+35	697	−130	748	−337
443	−618	494	+180	54500	+ 78	596	+ 43	647	+32	698	−134	749	−342
444	−664	49500	+192	546	+ 84	597	+ 50	648	+30	699	− 138	75000	−347
44500	−702	496	+204	547	+ 89	598	+ 58	649	+28	70000	−142	751	−352
446	−740	497	+208	548	+ 94	599	+ 65	65000	+26	701	−146	752	−357
447	−775	498	+211	549	+ 98	60000	+ 72	651	+23	702	−149	753	−362
448	−807	499	+214	55000	+102	601	+ 80	652	+21	703	−153	754	−367
449	−834	50000	+213	551	+106	602	+ 88	653	+18	704	−156	75500	−372
45000	−858	501	+210	552	+109	603	+ 96	654	+15	70500	−160	756	−378
451	−882	502	+205	553	+111	604	+103	65500	+12	706	−164	757	−383
452	−902	503	+199	554	+113	60500	+108	656	+ 9	707	−167	758	− 389
453	−918	504	+192	55500	+114	606	+113	657	+ 6	708	−171	759	− 394
454	−930	50500	+184	556	+116	607	+117	658	+ 3	709	−175	76000	−400
45500	−940	506	+178	557	+118	608	+120	659	0	71000	−179	761	−406
456	−948	507	+172	558	+119	609	+122	66000	− 3	711	−183	762	−412
457	−953	508	+166	559	+120	61000	+123	661	− 6	712	−187	763	−418
458	−956	509	+160	56000	+121	611	+122	662	− 9	713	−190	764	−424
459	−958	51000	+153	561	+121	612	+120	663	−12	714	−194	76500	−430
46000	−955	511	+145	562	+122	613	+118	664	−15	71500	−198	766	−436
461	−950	512	+137	563	+122	614	+115	66500	−18	716	−202	767	−442
462	−942	513	+128	564	+121	61500	+112	666	−21	717	−206	768	−448
463	−927	514	+119	56500	+121	616	+109	667	−24	718	−210	769	−454
464	−910	51500	+110	566	+120	617	+105	668	−27	719	−214	77000	−460
46500	−890	516	+100	567	+119	618	+102	669	−30	72000	−218	771	−466
466	−866	517	+ 89	568	+118	619	+ 98	67000	−33	721	−222	772	−472
467	−840	518	+ 79	569	+117	62000	+ 95	671	−36	722	−226	773	−478
468	−814	519	+ 68	57000	+115	621	+ 92	672	−39	723	−230	774	−484
469	−784	52000	+ 57	571	+114	622	+ 90	673	−42	724	−234	77500	−490
47000	−749	521	+ 46	572	+113	623	+ 87	674	−45	72500	−238	776	−496
471	−715	522	+ 35	573	+112	624	+ 85	67500	−49	726	−242		
472	−678	523	+ 24	574	+110	62500	+ 82	676	−52	727	−246		
473	−639	524	+ 13	57500	+107	626	+ 79	677	−56	728	−250		
474	−599	52500	+ 5	576	+104	627	+ 76	678	−59	729	−254		
47500	−559	526	− 2	577	+101	628	+ 73	679	−63	73000	−258		

Conversion of KIRCHHOFF's Spectral Measures into Wave-lengths, in terms of the Millimetre.

Kirchhoff's measure.	Corrected wave-length, m.m. 0·000.			Kirchhoff's measure.	Corrected wave-length, m.m. 0·000.		
381·7	77194	1 c		476·4	72997	1 b	
384·1	77079	2 c				2	
385·9	76990	2 d		477·0	72972	5 b	
387·5	76912	3 d				2	
388·9	76844	4 d		477·8	72940	4 b	
390·4	76774	4 e		479·1	72889	2 c	
392·1	76690	5 e				1	
393·6	76620	6 e		480·1	72850	6 c	
395·0	76552	6 e		480·4	72838	4 d	
396·2	76493	5 e		481·2	72807	4 c	
397·4	76437	4 e		482·1	72772	2 d	
398·4	76388	4 d		483·3	72722	4 d	
399·2	76351	4 d		484·1	72693	2 d	
399·8	76321	4 d		485·1	72652	3 d	
400·4	76298	3 d		486·2	72609	6 e	
401·9	76230	4 c		486·8	72585	2 c	
		3		from 488·2	72529	1	
402·4	76209	4		488·8	72506	5 a	
402·8	76188	5		489·6	72472	6 c	
403·2	76169	6		491·2	72408	3 e	
405·0	76086	5		491·5	72397	5 b	
405·6	76062	4		491·9	72378	4 c	
406·2	76034	3		493·1	72334	2 c	
406·8	76010	5 e		494·1	72292	3 b	
408·5	75916	1 d		495·4	72241	1 e	
423·7	75261	2 b		495·7	72229	2 b	
426·6	75106	2 b		497·2	72166	1 b	
433·8	74793	2 c		497·5	72155	2 a	
437·0	74656	2 b		498·4	72119	4 c	
442·8	74411	2 d		499·0	72093	5 b	
444·6	74332	2 c		499·9	72058	5 d	
445·8	74283	2 b		500·8	72025	3 d	
446·1	74271	2 b		501·8	71987	2 c	
447·0	74234	2 a		502·0	71981	5 b	
448·4	74173	1 b		502·6	71958	5 c	
452·6	73995	2 c		503·8	71909	6 d	
453·0	73979	1 b		504·3	71890	5 b	
454·4	73921	1 b		505·1	71861	6 c	
460·0	73681	1 c		506·2	71817	2 b	
461·0	73647	1 b		506·4	71810	5 b	
462·2	73589	2 b		506·6	71801	2 b	
463·3	73544	2 a		507·4	71772	5 c	
466·0	73432	1 b		508·2	71738	3 b	
466·5	73411	2 c		509·1	71703	3 b	
467·0	73390	1 b		509·9	71672	2 b	
468·1	73343	2 e		510·9	71634	1 a	
470·0	73261	2 b		512·9	71558	2 b	
470·5	73240	3 c		513·6	71533	3 b	
470·9	73225	2 b		517·1	71404	2 b	
472·4	73161	2 e		519·3	71314	2 b	
472·7	73149	3 c		521·6	71231	1 b	
473·8	73105	4 d		529·4	70945	1 b	
		1		530·4	70907	1 c	
474·7	73069	3 b		532·8	70818	1 b	
from 475·7	73027	2		536·9	70667	2 b	
				537·3	70654	1 b	

TABLE (continued).

Kirchhoff's measure.	Corrected wave-length, m.m. 0·000.		
540·6	70538	3 b	
541·1	70519	2 c	
542·0	70484	1 a	
543·6	70427	4 b	
544·6	70392	3 d	
547·0	70305	4 c	
547·9	70273	2 b	
549·6	70211	3 e	
551·2	70157	3 c	
552·5	70112	3 c	
⎧553·8	70063	1 c	
⎩554·0	70058	3 b	
554·6	70035	2 b	
557·0	69954	1 a	
557·7	69928	2 b	
558·1	69914	1 b	
559·7	69857	1 c	
561·5	69798	1 b	
562·5	69764	3 b	
563·0	69746	2 c	
564·1	69709	4 c	
565·0	69675	2 c	
566·0	69640	2 c	
566·9	69609	2 b	
567·4	69591	3 b	
⎧568·6	69551	2 b	
		1	
569·2	69532	2 b	
		1	
⎩570·0	69502	3 c	
570·6	69482	2 b	
572·2	69427	3 b	
572·9	69402	1 b	
573·6	69379	3 c	
574·4	69351	1 b	
575·1	69328	2 d	
576·6	69279	2 d	
578·1	69229	3 d	
579·6	69175	3 d	
581·1	69125	3 e	
582·5	69081	3 e	
583·8	69029	4 e	
585·0	68999	4 f	
586·2	68959	4 e	
587·0	68931	3 e	
587·9	68902	2 b	
589·0	68868	3 b	
589·4	68854	3 b	
589·9	68838	3 b	
590·3	68825	3 b	
590·7	68812	3 b	
591·1	68797	3 b	
591·5	68784	4 b	
591·9	68771	4 b	
592·3	68759	3 b	
B ⎧592·7	68756	6 c	
⎩593·1	68733	4 g	
595·0	68670	1 a	
596·6	68616	1 a	

Kirchhoff's measure.	Corrected wave-length, m.m. 0·000.		
597·4	68591	1 b	
601·2	68470	1 a	
601·8	68450	1 b	
602·8	68417	1 a	
606·0	68316	1 b	
608·3	68239	1 a	
612·4	68113	1 b	
613·4	68079	1 a	
623·4	67771	1 b	
626·1	67687	1 b	
631·4	67525	1 b	
638·4	67313	1 b	
639·8	67268	1 b	
641·0	67232	2 b	Ca
645·3	67103	1 b	
648·1	67018	1 b	
654·3	66836	2 b	
659·3	66689	2 a	
665·7	66505	2 a	
669·5	66395	2 b	
678·6	66142	1 b	
681·4	66063	1 a	
682·8	66024	1 b	
683·1	66016	2 a	
685·3	65954	1 b	
689·8	65831	2 b	
690·9	65801	1 a	
692·1	65769	2 a	
C ⎧ from ⎧693·4	65734	1	⎫
⎨ ⎨694·1	65715	6 e	⎬ Air
⎩ to ⎩694·8	65696	1	⎭
698·1	65607	2 a	
700·0	65556	2 a	
701·1	65526	2 b	
702·1	65499	2 a	
702·6	65485	1 b	
705·5	65410	2 a	
705·9	65399	2 a	
707·5	65356	1 b	
708·6	65329	2 b	
710·5	65277	2 e	
711·4	65253	3 c	
712·0	65238	2 b	
713·2	65206	1 b	
714·4	65173	1 c	
717·8	65083	2 b	Ca
from ⎧718·7	65060	2	Ba
⎩719·6	65037	3 a	
720·1	65026	2 e	Ca
721·1	64999	2 b	Fe
723·7	64931	2 c	
724·2	64918	1 b	
725·1	64896	1 b	Air
726·7	64855	3 c	
727·8	64826	1 c	
728·0	64821	2 a	
729·0	64795	2 b	Ca
731·7	64727	5 b	Ca
734·0	64668	1 d	

TABLE (continued).

Kirchhoff's measure.	Corrected wave-length, m.m. 0·000.			Kirchhoff's measure.	Corrected wave-length, m.m. 0·000.		
736·9	64595	3 b	Ca	838·2	62249	1 b	
740·9	64494	5 b	Ca, Cd	838·6	62241	2 b	
743·7	64423	2 b		839·2	62227	2 b	
744·3	64408	4 b		845·7	62096	2 b	
748·1	64313	4 b		849·7	62013	3 c	Fe
748·7	64299	3 b		851·2	61980	1 a	
750·1	64263	1 a		851·8	61967	1 a	
751·0	64242	1 b		855·0	61904	2 a	
752·3	64208	4 b		856·8	61867	2 a	
753·8	64173	3 b	Sr	857·5	61853	2 a	
756·9	64094	5 b	Fe	858·3	61838	2 a	
759·3	64035	3 b		859·7	61809	3 a	
764·2	63916	1 a		860·2	61798	3 d	Ca
771·8	63734	1 a	Zn	861·6	61769	2 a	
773·4	63696	2 b		862·2	61756	1 a	
774·8	63664	2 b		863·2	61739	2 c	
778·3	63579	1 b	(Ru, Ir)	863·9	61725	5 b	Ca
779·5	63553	1 b		864·4	61715	1 d	
781·9	63494	3 b		866·2	61678	2 b	
783·1	63468	4 b		867·1	61660	2 b	
783·8	63454	3 b		867·6	61650	1 a	
786·8	63382	1 a		869·2	61619	2 b	
788·9	63333	3 b		870·9	61585	1 b	
791·0	63284	1 d		871·4	61574	2 b	
791·4	63276	3 b		872·5	61553	1 b	
792·9	63243	2 d		874·0	61526	1 b	
794·5	63208	1 d		874·3	61520	4 b	Ba
798·1	63125	3 a		876·5	61474	4 a	
798·5	63115	4 a	Fe	877·0	61465	4 c	Fe
799·8	63086	2 b		879·8	61410	1 b	
800·3	63072	2 b		880·9	61389	1 a	
801·2	63055	1 a		881·6	61374	2 a	
801·5	63048	1 a		882·6	61356	1 a	
802·7	63020	1 b		883·2	61343	1 b	
803·5	63004	2 a		884·9	61311	4 b	Ca, Co
805·8	62951	1 b		887·7	61256	2 a	Ni
807·4	62917	2 b		890·2	61208	1 b	Ba
808·2	62898	2 c		891·7	61178	2 a	Ni
808·7	62888	1 c		894·9	61113	2 e	Ca, Li
809·5	62869	3 b	Au	896·1	61091	1 a	
809·9	62858	2 d		896·7	61080	1 b	
812·7	62798	1 a		898·9	61034	1 a	
813·1	62791	2 a		899·1	61031	1 a	
815·0	62749	4 b		900·2	61010	1 a	
816·8	62709	2 b		901·4	60985	1 a	
818·0	62685	3 c		901·6	60981	1 a	
819·0	62662	4 b		902·4	60965	1 a	
820·1	62638	4 b		903·1	60950	1 a	
820·9	62623	4 b		903·6	60941	1 a	
823·5	62565	1 a		904·6	60923	1 a	
824·0	62554	4 b		906·1	60892	2 c	
824·9	62535	1 d		912·1	60774	3 b	Fe
826·4	62504	2 a		*916·3	60690	2 b	
827·6	62478	1 a		923·0	60558	2 b	
828·0	62467	2 a		929·5	60428	2 b	
830·2	62419	3 b		931·3	60393	4 b	Fe
831·0	62404	4 c	Fe	932·5	60371	4 b	
831·7	62388	1 b		933·3	60355	4 c	
836·5	62286	2 b		935·1	60319	4 b	

* A large proportion of the measures, from 916·3 to 1006·8, are included in a subsequent Table of Atmospheric Lines.—G. B. A.

TABLE (continued).

Kirchhoff's measure.	Corrected wave-length, m.m. 0·000.			Kirchhoff's measure.	Corrected wave-length, m.m. 0·000.		
936·7	60287	4 b		1005·0	59018	2 b	Ni
937·4	60274	1 b		Da 1006·8	58989	6 b	Na
940·1	60217	3 b		1011·2	58926	3 a	
940·4	60210	2 b		1023·0	58756	1 a	
943·4	60153	3 b		1025·5	58720	3 a	
946·6	60091	3 b		1027·7	58690	2 a	
947·0	60084	1 a		1029·3	58666	3 c	Ca, Ni
949·4	60037	1 b		1031·8	58626	2 a	Ba
949·8	60029	1 b		1032·8	58612	1 a	
951·7	59992	1 c		1035·3	58576	1 a	
952·9	59969	3 b		1058·0	58257	2 b	
954·3	59944	3 b		1063·0	58185	2 b	
954·8	59935	3 b		1065·0	58155	2 b	
958·8	59859	3 b		1066·0	58143	1 a	
959·6	59845	3 b		1067·0	58130	2 b	
961·9	59799	1 a		1070·5	58078	2 b	
963·7	59764	1 c		1073·5	58036	1 a	
964·4	59753	1 c		1074·2	58027	1 a	
968·7	59673	2 a		1075·5	58008	3 a	
969·0	59668	2 a		1077·5	57982	1 a	
969·6	59657	3 a		from 1078·9	57960	} 1	
970·5	59640	1 b		to 1079·7	57949	}	
971·5	59619	2 c		1080·3	57940	1 a	
972·1	59608	1 b		1080·9	57932	1 a	
973·1	59590	3 a		1081·8	57920	2 b	Cu
973·5	59582	3 a		1083·0	57902	2 a	Ba
974·3	59569	2 a		1087·5	57838	2 a	
975·0	59556	2 a		1089·6	57810	2 a	
976·8	59521	3 a		1096·1	57720	3 c	Fe
977·4	59510	2 a		1096·8	57711	1 a	
977·7	59504	2 a		1097·8	57696	1 a	
979·1	59479	1 b		1100·4	57659	1 a	
980·8	59450	1 a		1102·1	57633	3 b	
981·2	59444	3 b		1102·9	57623	3 a	
982·0	59429	1 a		1103·3	57618	2 b	
982·3	59424	2 a		1104·1	57605	2 b	
983·0	59411	3 c		1107·1	57563	2 c	
984·5	59384	1 c		1111·4	57507	1 a	
986·3	59352	1 a		1119·0	57401	2 a	
986·7	59346	2 c		1122·6	57357	2 a	
987·4	59332	1 b		1128·3	57275	2 b	
988·9	59304	2 a		1130·9	57240	2 b	
989·2	59298	2 a		1133·1	57212	3 c	
989·6	59291	2 a		1133·9	57201	3 c	
990·8	59270	2 a		1135·1	57182	4 d	
991·2	59263	1 a		1135·9	57171	2 c	
991·9	59250	3 b	Fe	1137·0	57158	2 b	
992·4	59241	1 a		1137·8	57149	3 b	
993·9	59213	1 b		1141·3	57100	2 c	
994·3	59205	1 b		1143·6	57072	2 c	
995·0	59193	1 a		1146·2	67038	1 b	
997·2	59155	2 b		1147·2	57025	1 b	
998·1	59139	1 a		1148·6	57007	1 b	
998·9	59125	1 a		1149·4	56996	1 b	
999·2	59120	1 a		1151·1	56969	4 b	
1000·0	59106	1 a		1152·5	56952	2 b	
1000·4	59100	1 a		1154·2	56929	2 b	
1001·4	59083	1 a		(1155·7	56908	3 b	
D b 1002·8	59054	6 b	Na	(1155·9	56906	2 c	

TABLE (continued).

Kirchhoff's measure.	Corrected wave-length, m.m. 0·000.			Kirchhoff's measure.	Corrected wave-length, m.m. 0·000.		
1158·3	56874	2 a		1264·4	55552	1 a	
1160·9	56843	2 a		1264·9	55547	2 a	
1165·2	56785	1 a		1267·3	55519	3 a	
1165·7	56779	1 a		1268·0	55511	3 a	
1167·0	56764	1 d		1271·9	55464	1 a	
1168·3	56747	1 a		1272·4	55459	1 a	
1169·4	56732	1 a		1274·2	55438	3 b	Ba
1170·6	56716	2 c		1274·7	55431	3 a	Sr
1174·2	56670	5 d		1276·2	55414	2 a	
1175·0	56661	2 a		1276·7	55408	1 a	
1176·6	56639	3 c		1280·0	55369	6 d	
1177·0	56634	2 a		1281·3	55356	3 c	
1177·3	56630	1 a		1282·6	55341	2 c	
1177·6	56626	1 a		1285·3	55308	2 c	
1178·6	56615	1 a		1287·5	55284	1 c	Ba
1179·0	56610	1 a		1289·7	55256	2 c	
1179·4	56604	1 a		1291·9	55232	3 c	
1179·8	56599	1 a		1293·8	55211	3 c	
1180·2	56593	1 a		1294·9	55203	3 c	
1183·4	56553	2 a		1295·6	55188	1 a	
1184·8	56534	3 a		1296·3	55180	2 c	
1186·8	56507	2 a		1297·5	55165	1 a	
1187·1	56504	2 a		1298·9	55148	5 c	
1189·3	56477	3 b		1299·7	55139	2 c	
1190·1	56467	2 b		1302·0	55114	2 c	
1193·1	56429	3 a		1303·5	55096	5 c	
1199·6	56345	2 d		1306·7	55058	5 c	
1200·6	56332	4 b	Fe	1315·0	54962	4 c	
1201·0	56326	2 a		1315·7	54953	2 b	
1203·5	56297	2 c		1319·0	54916	3 c	Co
1204·2	56288	2 c		1320·6	54899	4 c	Sr
1204·9	56280	2 d		1321·1	54891	3 b	
1206·1	56264	1 c		1323·3	54866	2 b	
1207·3	56250	5 g	Fe	1324·0	54857	2 b	
1217·8	56118	5 d	Fe, Ca	1324·8	54849	4 d	Ni
1219·2	56102	3 c	Ca	1325·3	54843	2 d	
1220·1	56091	2 c		1327·7	54816	4 b	
1221·6	56072	5 d	Ca	1328·7	54805	2 b	
1224·7	56033	5 d	Ca	1330·4	54785	3 b	
1225·3	56024	1 b		1333·3	54752	1 a	
1226·6	56008	2 d		1334·0	54744	4 b	
1228·3	55988	2 d	Ca	1336·3	54720	1 b	
1229·6	55972	4 c	Ca	1337·0	54711	4 d	Fe
1230·5	55961	2 c		1337·8	54703	1 b	
1231·3	55952	5 d	Fe	1338·5	54693	1 b	
1232·8	55933	2 b		1343·5	54637	6 c	Fe
1235·0	55906	3 d	Ca	1351·1	54554	5 d	Fe
1237·8	55871	2 c		1352·7	54531	5 b	Fe
1239·9	55846	4 a	Fe	1356·5	54490	1 a	
1242·6	55814	6 c	Fe	1360·9	54443	1 a	
1245·6	55777	4 d	Fe	1361·6	54435	1 a	
1247·4	55756	3 b		1362·9	54420	5 b	Fe
1248·6	55742	3 d		1364·3	54405	1 a	
1250·4	55721	3 c		1364·7	54400	1 a	
1251·1	55713	2 b		1367·0	54375	6 d	Fe
1253·3	55686	2 b		1371·4	54324	1 b	Ba
1255·2	55663	2 b		1372·1	54317	1 b	
1257·5	55635	3 c		1372·6	54311	5 b	Fe
1258·5	55624	2 b		1374·8	54286	1 c	

TABLE (continued).

Kirchhoff's measure.	Corrected wave-length, m.m. 0·000.			Kirchhoff's measure.	Corrected wave-length, m.m. 0·000.		
1375·8	54272	2 a		1483·0	53148	4 b	
1377·4	54256	1 a		1487·7	53102	5 b	Fe
1379·0	54238	1 a		1489·2	53087	2 c	
1380·5	54223	4 c	Fe	1489·9	53082	1 a	
1384·7	54173	4 c	Fe	1491·2	53070	1 c	
1385·7	54164	5 b	Cr	1491·6	53067	3 c	
1386·3	54158	2 b		1492·4	53059	4 b	
1387·4	54147	2 b		1493·1	53053	4 b	
1389·4	54126	6 c	Fe	1494·5	53038	1 a	
1390·9	54112	5 d	Fe	1495·9	53024	1 a	
1394·2	54074	4 c		1497·3	53012	1 a	Cu
1395·3	54062	1 c		1501·3	52976	2 b	
1396·4	54050	2 c		1504·8	52944	1 a	
1397·5	54039	5 c	Fe	1505·3	52938	1 a	
1400·2	54005	3 b		1505·7	52936	2 a	
1401·6	53989	4 c	Fe	1506·3	52930	5 c	Fe
1403·1	53975	3 c		1508·6	52908	5 b	Fe
1404·1	53966	1 b		1510·3	52893	2 c	Co
1405·2	53954	3 b		1515·5	52844	4 d	
1410·5	53896	4 c	Fe	1516·5	52837	4 c	
1412·5	53874	2 b		1519·0	52813	4 d	
1414·0	53859	2 b		E { 1522·7	52782	6 c	Fe, Ca
1415·8	53838	2 b		1523·7	52772	6 c	Fe
1419·4	53797	2 b		1525·0	52761	1 b	Co
1421·5	53773	6 c	Fe	1527·7	52738	5 c	Fe, Co
1423·0	53759	5 b	Fe	1528·7	52731	5 c	Ca
1423·5	53753	2 b		1530·2	52717	4 c	Ca
1425·4	53734	5 b	Fe	1531·2	52707	4 c	
1427·5	53709	3 b		1532·5	52698	4 b	Ca
1428·2	53704	5 b	Fe	1533·1	52694	4 b	Ca
1430·1	53683	5 b		1541·4	52619	1 g	
1431·2	53671	1 b		1541·9	52615	3 b	
1438·9	53590	4 c	Co	1543·7	52599	2 a	
1440·2	53578	1 b	Co	1545·5	52583	2 a	
1443·1	53549	2 b		1547·2	52570	3 a	
1443·5	53544	2 b	Ca	1547·7	52566	2 a	
1444·4	53535	4 b		1551·0	52542	2 a	
1446·7	53514	4 c		1551·6	52535	2 a	
1448·7	53492	2 a	Co	1555·6	52500	2 a	
1449·4	53483	1 a	Co	1557·3	52488	3 a	
1450·8	53465	5 c	Fe	1561·0	52459	1 a	
1451·8	53455	5 b	Fe	1564·2	52434	1 a	
1453·7	53437	1 a		1566·5	52414	2 b	Co
1454·7	53425	3 b		1567·5	52406	2 b	
1456·6	53407	1 a		1569·6	52391	5 c	Fe
1458·6	53385	3 c		1573·5	52360	5 a	
1461·5	53355	2 c		1575·4	52346	1 b	
1462·2	53347	2 c		1577·2	52332	5 c	Fe
1462·8	53341	5 c	Fe	1577·6	52329	3 c	
1463·3	53338	5 c	Fe	1579·4	52317	2 a	
1464·8	53320	1 a		1580·1	52312	2 a	
1465·3	53317	1 a		1588·3	52247	1 g	Cu
1466·8	53302	5 c	Fe	1589·1	52242	3 b	
1468·8	53282	2 b		1590·7	52231	3 b	
1469·6	53272	1 b		1592·3	52217	3 b	
1473·9	53234	5 b	Fe	1598·9	52166	2 b	
1475·3	53220	1 a		1601·4	52148	6 b	Cr
1476·8	53205	1 a		1601·7	52145	3 d	
1477·5	53198	1 a		1604·4	52126	5 b	Cr

TABLE (continued).

Kirchhoff's measure.	Corrected wave-length, m.m. 0·000.			Kirchhoff's measure.	Corrected wave-length, m.m. 0·000.		
1606·4	52110	5 b	Cr	1710·7	51349	5 a	
1609·2	52086	5 b		1712·2	51338	3 b	
1611·3	52072	1 c		1713·4	51331	5 b	
1613·9	52053	3 b		1715·2	51317	4 b	
1615·6	52040	2 b		1717·9	51297	4 b	
1616·6	52036	1 b		1719·4	51286	1 c	
1617·4	52029	2 b		1726·9	51233	1 a	
1618·2	52022	3 b		1727·3	51230	3 b	Ni
1618·9	52018	4 b		1733·6	51185	5 b	
1621·5	51996	1 b		1734·6	51178	3 b	
1622·3	51990	5 c	Fe	1737·7	51155	5 d	
1623·4	51981	5 b	Fe	1741·0	51131	4 b	Cu
1627·2	51953	5 b	Ca	1742·7	51119	1 a	
1628·2	51946	1 b		1743·1	51117	1 a	
1631·5	51922	1 b		1744·6	51106	2 a	
b ⎧ 1633·5	51907	4 g		1748·9	51076	3 c	Ni
⎨ 1634·1	51902	6 g	Mg	1749·6	51071	2 d	Ni
⎩ 1634·7	51898	4 g		1750·4	51066	5 c	
1638·7	51870	1 b		1752·0	51056	2 b	
1642·1	51844	1 b		1752·8	51050	4 c	
1643·0	51838	1 b	Ni	1762·0	50986	3 c	
1647·3	51805	5 a		1771·5	50917	3 c	
⎧ 1648·4	51797	4 e		1772·5	50912	3 c	
b₁ ⎨ 1648·8	51793	6 f	Mg	1774·0	50899	2 b	
⎩ 1649·2	51791	4 e		1775·8	50887	3 b	Ni
1650·3	51783	6 b	Fe	1776·5	50883	3 c	Ni
⎧ ⎧ 1653·7	51757	6 b	Fe, Ni	1777·5	50876	3 c	
b₂ ⎨ ⎩ 1654·0	51758	4 c		1778·5	50868	3 e	
⎪ ⎧ 1655·6	51742	6 e	Fe, Mg	1782·7	50839	3 b	
⎩ ⎩ 1655·9	51739	4 d		1784·4	50826	1 b	
1657·1	51731	5 b		1785·0	50822	4 b	
⎧ 1658·3	51724	2 b		1787·7	50802	2 c	
⎩ to 1659·4	51716	1		1788·7	50795	3 b	
1662·8	51693	5 b	Fe	1793·8	50762	4 b	
1667·4	51658	3 a		1795·4	50751	1 a	
1670·3	51638	1 a		1796·0	50747	3 a	
1671·5	51630	3 b		1797·8	50736	1 a	
1672·2	51625	4 a	Ni	1799·0	50727	4 c	
1673·7	51615	4 a		1799·6	50723	3 b	
1674·7	51607	3 c	Cu	1806·4	50677	2 b	
⎧ 1676·2	51595	2 d		1818·7	50595	5 b	
⎩ 1676·5	51593	4 b		1821·4	50577	5 b	
1677·9	51582	4 c		1822·6	50570	3 a	
1681·6	51554	4 c		1823·2	50565	2 a	
1684·0	51538	4 a	Ni	1823·6	50562	2 a	
1684·4	51535	1 b		1828·6	50527	1 b	
1685·9	51523	2 a		1830·1	50518	3 b	
1686·3	51520	2 a		1832·8	50501	2 a	Ca
1689·5	51498	5 c		1833·4	50497	6 c	
1690·0	51494	5 b	Ni	1834·3	50491	6 c	
1691·0	51487	5 b		1835·9	50482	3 b	
1693·8	51467	6 e	Fe	1836·7	50476	3 c	
1696·5	51447	3 c		1837·5	50472	3 c	
1697·0	51443	3 c	Ni	1841·0	50446	4 b	
1701·8	51411	5 c	Fe	1841·6	50443	4 b	
⎧ 1704·6	51391	2 c		1842·2	50439	4 b	Ni
⎩ 1704·9	51389	3 b		1848·9	50395	2 c	
⎧ 1707·6	51370	2 c		1851·0	50379	1 c	
⎩ 1707·9	51368	3 b		1853·2	50364	3 b	

TABLE (continued).

Kirchhoff's measure.	Corrected wave-length, m.m. 0·000.			Kirchhoff's measure.	Corrected wave-length, m.m. 0·000.		
1854·0	50359	2 b		1966·2	49578	2 b	
1854·9	50354	4 c		1966·7	49573	2 b	
1856·9	50341	1 c		1970·1	49548	3 b	
1857·9	50336	2 b		1974·7	49514	4 b	
1860·4	50318	2 b		1975·7	49506	2 d	
1861·3	50312	3 c		1979·2	49481	3 c	
1862·3	50305	2 b		1982·8	49454	5 a	
1864·9	50290	3 b		1983·3	49449	5 a	
1867·1	50274	5 d	Fe	1983·8	49445	5 a	
1868·4	50265	5 b	Ni	1984·5	49440	4 b	
1869·5	50258	1 c		1985·8	49430	4 b	
1870·6	50250	3 a		1986·9	49421	2 a	
1872·4	50237	5 b		1987·5	49418	3 a	Ni
1873·4	50230	6 b		1989·5	49402	6 c	Ba
1874·2	50226	2 a		1990·4	49394	5 b	
1874·8	50222	2 a		1991·8	49383	1 b	
1875·8	50215	2 c		1994·1	49365	5 b	
1876·5	50210	6 b		1996·9	49343	2 a	
1884·3	50159	6 b		1997·5	49340	2 a	
1885·8	50147	6 b		1999·6	49324	2 c	
1886·4	50143	6 b		2000·6	49313	5 a	
1889·5	50122	1 g		2001·6	49304	5 c	Fe
1891·0	50112	3 b		2003·2	49292	3 b	
1892·5	50104	5 b		2003·7	49289	1 a	
1893·8	50092	1 b		⎧2004·9	49280	2 d	
1894·8	50084	3 b		⎩2005·2	49279	6 d	Fe
1896·2	50074	4 b		2007·2	49263	6 c	Fe
1897·9	50063	1 c		2008·1	49255	1 b	Ni
1900·0	50047	1 c		2008·6	49251	1 b	
1904·5	50017	4 b		2009·8	49242	2 b	
1905·1	50013	2 c		2013·9	49212	2 a	
1908·5	49989	5 d		2014·3	49210	2 a	
1911·9	49965	3 c		⎧2015·7	49198	} 1	
1916·2	49935	1 d		⎩2016·9	49189		
1917·5	49927	4 b		⎧2017·7	49181	2 b	
1917·9	49924	4 b				1	
1919·8	49912	4 b		⎩2018·5	49176	2 b	
1920·2	49909	4 b	Ni	2019·5	49169	2 a	
1921·1	49902	4 b		2021·2	49153	1 g	
1922·0	49897	4 b		2024·9	49123	1 a	
1922·4	49893	4 b		2025·7	49112	4 a	Ni
1923·5	49885	4 b		2026·8	49106	4 b	
1925·8	49868	4 b	Ni	2031·1	49073	2 c	Ba
1928·0	49853	4 b		2035·4	49038	1 b	
1931·2	49830	1 c		2039·6	49005	1 b	
1932·5	49823	1 c		2041·3	48991	6 c	Fe
1936·2	49796	3 c		2042·2	48983	6 b	Fe
1939·5	49775	2 c		2044·5	48966	5 b	
1940·6	49766	2 c		2045·0	48962	5 b	
1941·5	49760	3 b		2047·0	48944	3 d	
1943·5	49746	2 c		2047·8	48939	3 b	
1944·5	49740	3 b		2049·3	48925	3 a	
1947·6	49717	4 c		2049·7	48923	3 a	
1949·4	49703	1 c		2051·3	48908	3 c	
1953·6	49672	2 b		2053·0	48892	4 b	
c ⎧1960·8	49621	6 b		2053·7	48885	4 c	
⎪		4	} Fe	2058·0	48849	6 c	FeCa
⎩1961·2	49615	6 b		2060·0	48832	2 b	
1964·3	49593	2 c		2060·6	48827	2 a	

TABLE (continued).

Kirchhoff's measure.	Corrected wave-length, m.m. 0·000.			Kirchhoff's measure.	Corrected wave-length, m.m. 0·000.		
2061·0	48824	1 a		2148·5	48079	4 a	
2064·7	48790	2 c	Ni	2148·9	48076	3 a	
2066·2	48778	5 c	Fe	2150·1	48069	3 a	
2067·1	48770	5 c	Fe	2150·5	48068	3 a	
2067·8	48766	3 b		2157·0	48014	3 a	Co, Au
2068·8	48758	3 b		2157·4	48011	5 a	
2070·6	48740	1 b		2159·0	47998	1 c	
2071·3	48735	1 b	Co	2160·6	47984	5 a	
2073·5	48719	3 b	Ni	2160·9	47981	4 a	
2074·6	48709	2 b		2161·7	47975	4 a	
2076·5	48693	1 b		2162·6	47966	3 a	
2077·3	48686	2 b		2163·7	47957	4 a	
F (2079·5	48666	4 e		2164·0	47952	4 a	Ni
2080·0	48663	6 g		2167·5	47924	6 b	
(2080·5	48660	4 e		2171·5	47889	3 b	Co
2082·0	48642	6 a	Fe	2172·2	47884	2 a	
2084·6	48624	2 b		2175·7	47854	2 b	
(2086·0	48610	} 1		2176·4	47849	1 b	
to 2086·9	48603	}		2179·9	47819	5 b	
2086·9	48603	3 b	Ni	2181·2	47808	3 e	
2087·6	48598	1 a		2184·9	47780	5 b	
2089·7	48583	1 a		2186·5	47769	3 b	
2090·9	48573	1 a		2187·1	47764	5 a	
2094·0	48546	2 b		2187·9	47757	5 a	
2096·8	48523	1 b		2188·5	47752	5 a	
2098·8	48505	1 a		2190·1	47739	5 b	
2099·8	48499	2 a		(2191·9	47725	3 e	
2100·4	48494	1 a		2192·3	47721	5 b	
2102·6	48475	4 a		2193·3	47713	5 a	
2103·3	48469	4 b		2195·7	47688	2 b	
2104·0	48463	4 a		2197·1	47678	2 b	
2105·1	48456	4 b		2197·7	47673	2 b	
2107·0	48439	1 a		2198·8	47663	4 a	
2107·4	48435	2 a		2199·2	47660	3 a	Ni
2109·1	48424	2 b		2201·1	47645	2 b	
2111·1	48405	3 b		2201·9	47638	5 c	
2112·7	48391	3 b	Ni	2203·3	47626	2 a	
2115·0	48372	3 a	Ni	2203·8	47623	1 a	
2115·4	48367	3 a		2205·1	47611	1 b	
2119·8	48331	1 b		2206·4	47601	1 a	Co
2121·2	48316	4 b		2206·7	47598	1 a	
2121·9	48311	5 c		2209·1	47578	4 c	
2124·3	48290	1 b		2211·7	47556	4 b	
2125·1	48284	2 b		2213·4	47542	4 b	
2127·7	48260	3 b		2215·1	47529	1 b	
2132·3	48219	2 a	Co	2216·7	47515	3 b	
2132·7	48213	1 a		2217·5	47507	3 b	
2133·8	48203	2 a		2218·3	47501	3 a	
2134·3	48200	1 a		2219·8	47489	3 b	
2136·0	48186	5 a	Zn	2221·3	47476	1 a	
(2138·0	48169	2 g		2221·7	47473	1 a	
2138·4	48165	4 a		2222·3	47469	5 c	
2139·5	48154	4 a		2223·5	47459	3 c	
2140·4	48147	4 a		2225·4	47443	2 b	
2141·9	48135	2 a		2226·2	47434	4 b	
2142·4	48131	5 a		2227·6	47423	2 a	
2144·6	48112	4 a		2228·6	47415	2 a	
2146·9	48092	3 a		2229·1	47410	4 a	
2147·4	48089	4 a		2230·7	47397	4 a	

TABLE (continued).

Kirchhoff's measure.	Corrected wave-length, m.m. 0·000.			Kirchhoff's measure.	Corrected wave-length, m.m. 0·000.		
2231·2	47392	2 a		2316·0	46723	2 b	
2232·3	47385	4 a		2316·6	46718	1 b	
(2233·7	47372	5 c		2322·0	46676	2 b	
(2234·0	47369	2 c		2323·0	46669	2 b	
2237·4	47345	1 b		2325·3	46649	6 d	
2238·7	47336	1 b		2328·3	46626	5 b	
2240·0	47324	3 b	Zn	2329·5	46618	5 b	Cu
2241·4	47310	2 b		(2332·8	46592	2 b	
2245·1	47281	3 b		(2333·0	46589	5 d	
2246·2	47272	1 b		2334·1	46581	2 d	Ni
2248·2	47256	3 c		2335·0	46574	5 b	
(2249·7	47246	6 a	Ni	2336·2	46565	2 d	
(2250·0	47241	3 d		2336·8	46561	5 b	
2255·4	47198	4 b		2339·9	46540	4 b	
2256·2	47193	2 b		2342·5	46519	1 d	
2257·1	47185	4 d		from (2343·7	46508	1	
2257·6	47181	2 b		(2345·1	46496	2 d	
2258·5	47175	2 c		2346·7	46483	4 b	
2259·4	47171	4 c		2347·3	46478	4 b	
2261·4	47156	1 b		2349·4	46464	1 b	
2262·1	47152	2 a		2349·9	46460	2 b	
2263·4	47142	2 a		2351·4	46446	1 c	
2264·3	47136	6 d		2352·2	46441	2 b	
2266·2	47121	2 a		2354·1	46426	6 c	
2266·6	47118	2 a		2357·4	46401	5 a	
2268·0	47105	3 a		2358·4	46390	5 b	
2269·1	47098	3 a		2361·0	46371	1 d	
2269·9	47092	3 a		2362·2	46363	1 c	
2270·2	47089	3 a		2362·6	46362	4 b	
2274·2	47064	1 d		2364·0	46350	4 b	
2278·4	47026	4 c		2365·9	46336	2 b	
2279·8	47018	2 a		2366·8	46330	1 b	
2280·7	47009	2 a		2367·7	46323	2 b	
2282·0	46998	1 a		2369·7	46309	2 b	
2282·3	46996	1 b		(2371·4	46295	2 b	
2283·6	46984	2 a		(2371·6	46294	4 b	
2284·9	46975	2 b		2372·4	46287	4 b	
2286·1	46966	2 b		2374·2	46272	3 b	
2288·1	46949	2 a		2375·0	46268	2 b	
from (2289·1	46942	1		2375·6	46264	4 b	
(2289·9	46935	2 b		2376·1	46259	1 b	
2290·4	46931	1 b		2379·0	46236	6 c	
2291·8	46921	2 g	Zn	2381·6	46217	6 c	
2293·1	46910	2 a		2386·1	46185	3 b	
		1		2386·6	46181	2 a	
2293·6	46905	3 b		2388·7	46163	2 c	
2294·5	46898	2 b	Cd	2389·7	46155	2 c	
2301·7	46840	4 c		2390·7	46149	3 a	
2302·9	46829	3 b		2391·2	46143	1 b	
2305·3	46807	3 d		2393·1	46131	5 b	
2306·8	46797	4 c		2394·4	46121	4 a	
2307·8	46788	1 b		(2395·8	46111	1 f	
2308·2	46786	5 b		(2396·1	46110	3 b	
to (2309·0	46780	5 c		(2396·7	46106	2 a	
(2310·4	46770	1				1	
2310·9	46766	2 e		(2397·4	46099	2 a	
2312·5	46752	3 b		2399·6	46084	3 a	
2313·7	46742	3 b		2399·9	46082	3 a	
2314·3	46737	3 b		2402·2	46061	3 b	

TABLE (continued).

Kirchhoff's measure.	Corrected wave-length, m.m. 0·000.			Kirchhoff's measure.	Corrected wave-length, m.m. 0·000.		
2403·2	46052	3 b		2478·7	45495	2 a	
2404·9	46041	2 b		2479·7	45486	2 a	
2406·2	46032	2 b		2480·1	45484	2 a	
2406·6	46029	6 c		2481·1	45475	1 a	
2407·2	46022	1 b		2482·1	45471	1 a	
2408·2	46016	4 b		2482·4	45467	1 c	
2409·0	46009	1 b		2486·6	45437	5 b	
2410·2	46000	4 b		2487·0	45433	5 b	
2412·8	45985	3 b		2488·2	45426	4 b	
2414·7	45969	2 b		2489·4	45418	5 d	
(2416·0	45961	3 d		(2490·5	45411	5 a	
(2416·3	45957	5 b		(2490·8	45408	3 d	
2418·0	45946	3 b		2493·0	45394	3 a	
2419·3	45937	5 b		(2493·6	45390	5 a	Co
2420·6	45927	2 b		(2493·9	45388	3 f	
2422·3	45915	6 d	Co	2495·8	45375	5 b	
2423·8	45904	3 c		2497·2	45364	6 d	
2424·4	45899	4 b		2499·0	45352	3 b	
2426·5	45885	4 b		2499·8	45346	3 b	
2428·4	45871	1 a		2500·3	45342	4 c	
2429·5	45864	3 b		(2502·2	45329	4 c	} Ba
2431·9	45846	2 b		(2502·4	45327	1 b	
2432·4	45842	1 b		2505·6	45304	4 d	
(2435·3	45820	2 b		2509·4	45279	2 d	
(2435·5	45819	5 c		2512·1	45258	1 e	
(2435·7	45816	2 b		2512·5	45256	2 a	
(2436·5	45810	5 a		2513·2	45252	2 b	
2438·5	45796	1 a		2513·5	45249	1 b	
2439·4	45789	2 b		2517·0	45226	3 b	
2440·0	45784	1 a		(2518·2	45216	2 c	
2441·8	45770	2 a		(2518·4	45214	3 a	
2442·4	45767	1 a		2520·9	45199	3 a	
2443·9	45755	5 a		2522·3	45189	1 a	
2444·2	45753	5 a		2525·0	45172	2 a	
2445·3	45745	1 c		2525·4	45168	1 b	
2446·6	45735	5 b		2527·0	45156	4 a	
2452·1	45698	2 c		2532·0	45124	2 b	
2454·1	45678	4 b		2535·5	45100	2 b	
2457·5	45656	4 b		2535·9	45096	2 b	
2457·9	45652	4 b		2536·6	45092	1 b	
2458·6	45647	3 a		2537·1	45089	5 c	
2459·5	45640	2 b		2538·0	45082	1 b	
2460·4	45632	1 c		2538·3	45080	2 a	
2461·2	45626	6 b	Ba	2540·5	45067	2 g	Pt
2463·4	45609	4 b		2543·5	45047	4 c	
2466·0	45588	3 a		2544·5	45040	2 d	
2467·3	45579	3 c		2545·4	45034	1 c	
2467·6	45576	5 c		2547·2	45020	6 c	
2467·9	45574	3 c		2547·7	45016	2 b	
2468·7	45568	3 a		2548·4	45012	1 c	
2470·1	45558	4 a		2549·7	45003	1 b	
(2471·2	45550	2 b		2550·1	45000	1 b	
(2471·4	45548	4 a		(2551·2	44991	1 b	
2472·9	45537	4 a		(2551·4	44989	3 a	
2473·8	45530	2 c		(2552·4	44983	3 a	
2474·6	45524	4 b		(2552·6	44981	1 b	
2475·5	45519	1 c		2553·6	44975	3 a	
2477·4	45503	2 a		2554·0	44972	3 a	
2477·8	45500	2 a					

TABLE (continued).

Kirchhoff's measure.	Corrected wave-length, m.m. 0·000.			Kirchhoff's measure.	Corrected wave-length, m.m. 0·000.		
2554·9	44965	3 a		2624·1	44495	1 b	
2555·1	44964	2 c		2625·2	44487	5 a	
2556·3	44955	2 c		2625·9	44482	4 a	
2559·9	44932	3 b		2626·3	44479	2 a	
2562·1	44917	4 b		2627·0	44475	5 b	
2564·0	44905	3 b		2627·9	44468	2 a	
2565·0	44898	6 c		2628·9	44462	1 c	
2565·9	44891	2 b		2629·7	44458	1 b	
2566·3	44888	3 d		2630·5	44452	1 a	
2567·8	44879	3 b		2633·6	44431	2 c	
2568·4	44875	2 b		2634·4	44427	1 d	
2574·4	44834	5 c		2635·5	44420	3 b	
2579·3	44801	3 d		2636·4	44415	2 c	
2581·0	44790	1 a		2637·4	44408	4 b	
2581·5	44786	1 a		2638·5	44400	4 e	} Ca
2582·0	44783	2 a		2638·8	44398	5 a	
2582·4	44779	2 a		2639·6	44393	1 c	
2582·8	44776	1 a		2640·6	44386	2 c	
2584·0	44767	3 e		2641·6	44379	3 c	
2585·4	44759	5 b		2642·5	44374	2 a	
2587·9	44741	3 a		2643·2	44371	1 a	
2588·5	44737	5 b		2643·5	44369	1 a	
2589·7	44729	1 b		2645·6	44355	4 b	
2591·3	44718	4 a		2646·2	44351	2 g	(La, Di)
2591·7	44715	2 c		2650·5	44326	5 b	
2593·0	44705	1 c		2650·7	44324	3 c	
2594·9	44693	2 b		2652·9	44309	1 d	} Ca
		1		2653·2	44307	5 b	
2595·4	44690	4 a		from 2656·7	44286	1	
2595·9	44686	4 a		2657·9	44280	3 b	
		1		2658·6	44275	1 b	
2596·4	44682	2 c		2664·9	44236	3 a	
2597·7	44673	3 b		2665·9	44229	3 b	
2598·5	44668	1 b		2666·7	44224	1 b	
2599·4	44662	3 c		2667·6	44216	3 a	
2599·7	44661	5 b		2668·0	44215	1 b	
2600·6	44654	2 a		2669·4	44205	3 b	
2601·0	44651	2 c		f* 2670·0	44201	6 e	Fe
2602·1	44643	4 b		2673·8	44176	1 a	
2602·9	44636	1 a		2674·5	44171	2 a	
2603·6	44631	2 b		2675·6	44163	2 c	
2604·0	44628	1 a		2676·5	44156	2 a	
2604·8	44623	4 b		2677·2	44151	1 a	
2605·8	44616	3 b		2678·4	44143	1 a	
		2	} Ca	2679·0	44139	2 a	
2606·6	44610	5 c		2680·0	44133	5 b	
2607·1	44607	3 c		2680·2	44131	3 b	
2608·2	44599	1 c		2681·2	44125	5 a	
2608·6	44597	1 b		2683·1	44112	4 b	
2608·9	44595	1 a		2686·0	44093	3 c	
2610·2	44587	1 a		2686·4	44091	6 f	Fe
2612·3	44573	3 b		2686·8	44089	3 e	
2613·6	44564	2 c		2688·4	44077	2 e	
2614·1	44561	3 c		2690·8	44061	5 b	
2616·5	44547	2 b		2691·1	44059	3 e	
2619·1	44530	5 b		2692·3	44052	3 c	
2619·9	44525	3 a		2693·5	44045	4 c	
2620·3	44522	3 a		from 2695·2	44033	} 1	
2622·3	44509	1 b		to 2696·8	44023		

* The identification of f appears doubtful.—G. B. A.

TABLE (continued).

Kirchhoff's measure.	Corrected wave-length, m.m. 0·000.			Kirchhoff's measure.	Corrected wave-length, m.m. 0·000.		
2698·2	44015	1 f		2755·4	43677	1 b	
from 2699·8	44005	1		2755·8	43676	2 b	
2700·7	44000	2 a		2756·5	43671	1 c	
2702·1	43992	3 b		2757·2	43667	1 c	
2702·3	43991	4 a		2759·4	43655	1 a	
2702·5	43989	3 b		2760·1	43652	2 a	
2703·5	43984	3 a		2760·6	43649	2 d	
from 2703·8	43981	} 1		2762·0	43641	4 e	
to 2704·9	43975			2763·8	43631	3 f	
2707·4	43960	1 f		2767·2	43613	1 d	
2707·7	43958	3 a		2768·2	43607	2 a	
2708·9	43951	4 b		2768·5	43606	1 a	
2709·6	43945	2 b		2770·0	43598	2 b	
2710·6	43940	3 a		2770·8	43594	2 b	
2710·9	43938	1 g		2774·0	43577	5 c	
2711·9	43932	1 a		2775·4	43571	4 c	
2712·8	43926	2 a		2775·7	43569	6 c	
2713·3	43923	3 a		2776·0	43567	4 c	
2714·3	43917	2 a		2777·3	43559	} 3 a	
2715·2	43913	2 b				} 2	
2716·1	43907	1 d		2777·8	43557		
2718·5	43893	3 g				} 1	
2719·0	43890	4 c		2778·5	43554		
		1		2781·2	43540	2 b	Fe
2720·2	43883	} 2		2782·2	43534	1 b	
2720·8	43879	} 6	Fe	2782·9	43531	3 b	
2721·6	43874	}		2783·9	43525	1 b	
2722·8	43867	} 3		2784·8	43521	1 c	
2725·5	43852	2 d		2785·1	43519	2 c	
2725·8	43849	3 a		2788·8	43499	1 b	
2726·8	43843	2 a		2789·1	43498	3 c	
2728·0	43835	4 b		2790·5	43491	1 c	
2728·4	43833	1 b		2791·1	43487	3 b	
2729·8	43825	2 c		2793·0	43477	} 1	
2730·7	43820	1 b		2794·0	43473	} 2	
2731·6	43814	3 c		2795·7	43465	} 6	
2732·4	43809	1 c		2796·7	43460	} 2	
2733·7	43802	5 b		2797·6	43455	3 b	
2734·1	43799	3 b				2	
		1		2798·0	43453	3 b	
2735·7	43790	3 b				1	
2736·5	43785	3 b		2798·9	43448	2 c	
2736·9	43783	3 b				1	
2737·4	43779	1 a		2799·5	43445	2 c	
2737·8	43777	2 a				1	
2739·2	43769	2 c		2800·1	43443	3 b	
2739·9	43765	1 b				1	
2741·3	43757	3 d		2800·7	43440	3 b	
2741·7	43754	3 b				1	
2743·8	43741	1 f		2801·4	43435	4 d	
2744·1	43740	4 c		2804·5	43419	1 b	
2744·3	43739	1 d		2805·4	43414	1 b	
2746·8	43724	} 1		2806·9	43405	1 c	
2747·2	43722			2807·2	43403	2 a	
2747·6	43720	3 a		2808·6	43396	1 b	
2748·0	43718	4 c		2808·8	43395	2 a	
2749·8	43709	3 c		2809·0	43394	1 b	
2750·6	43705	3 a		2810·8	43384	2 b	
2754·5	43682	2 c					

TABLE (continued).

Kirchhoff's measure.	Corrected wave-length, m.m. 0·000.		
2811·7	43379	2 a	
2812·0	43377	2 a	
2812·5	43375	2 a	
2812·8	43373	1 e	
2814·1	43366	1 b	
2817·7	43346	3 c	
2819·2	43338	3 b	
2819·6	43336	2 b	
2820·6	43331	} 2	
2821·0	43329	} 3	
2821·6	43325	} 6	
2822·3	43322	} 6	Fe
		3	
2823·4	43317	4 c	
2824·2	43313	3 a	
		2	
2825·0	43309	4 c	
		3	
2825·9	43304	4 b	
		3	
2826·5	43300	4 e	
2828·9	43288	3 b	
2830·7	43278	3 g	
2834·2	43260	5 c	Ca
2837·7	43241	1 g	
2841·4	43221	5 b	
2841·7	43219	4 e	
2843·0	43211	3 d	
2843·3	43209	4 a	
2844·0	43205	3 b	
2845·3	43195	4 f	
		2	
2846·1	43191	3 c	
		2	
2846·9	43186	4 c	
		1	
2847·7	43181	4 a	
		2	
2848·0	43179	4 a	
		2	
2848·4	43177	3 b	
		2	
2848·9	43174	3 b	
		2	
2849·3	43172	3 b	
		2	
2849·8	43168	3 b	
		2	
2850·2	43167	3 b	
		2	
2850·7	43163	3 b	
		2	
2851·1	43161	3 b	
		2	

Kirchhoff's measure.	Corrected wave-length, m.m. 0·000.		
2851·6	43158	3 b	
		2	
2852·0	43155	4 a	
		2	
2852·3	43154	4 a	
		1	
2853·1	43148	} 3	
2853·6	43145	} 4	
2854·1	43142	} 6	} Fe
G 2854·7	43138	} 4	} Ca
2855·2	43135	} 4	
2855·7	43132	} 3	
2856·9	43124	4 d	
from 2857·9	43119	3	
2858·5	43116	4 a	
2858·9	43113	} 2	} Sr
2859·4	43110	} 3	
2860·2	43105	} 1	
2860·9	43101	} 2	
		1	
2861·7	43097	4 b	
2861·9	43095	3 b	
		1	
2863·1	43088	3 b	
2863·6	43085		
		4	
2864·2	43081	5 b	
		2	
2864·7	43079	4 b	Ca
		2	
2865·3	43075	4 c	
		1	
2866·3	43069	5 b	
		3	
2867·1	43065		
		2	
2868·1	43058	4 c	
		3	
2869·7	43048	5 c	Ca
		4	
2871·2	43039		
2872·2	43033	4 d	
		1	
2873·4	43025	2 b	
		1	
2873·9	43022	2 b	
		1	
2874·3	43019	3 b	
		1	
2874·7	43017	2 b	
		1	
2875·2	43014	4 c	

The following Tables are to be substituted for those in pages 51, 52, 53, of the Memoir in the Philosophical Transactions, 1868.

Conversion of KIRCHHOFF's Spectral Measures into Wave-Lengths in terms of the Millimetre, for the lines produced by Metals and Air.

(The lines marked with an asterisk appear to coincide with dark lines in the Solar Spectrum)—Note by KIRCHHOFF.

Kirchhoff's measure.	Corrected wave-length, m.m. 0·000.		Kirchhoff's measure.	Corrected wave-length, m.m. 0·000.	
Ce			1451·0	53464	1
1190·1	56467	1	1606·8	52107	2
1249·9	55727	1	1627·9	51949	2
1256·7	55645	1	1634·8	51898	2
1329·1	54799	2	2136·8	48178	1
1332·4	54764	2			
1336·2	54721	1	**(La, Di)**		
1385·0	54170	2	1025·0	58726	1
1401·7	53988	2	1064·5	58162	1
*1438·9	53591	3	1066·1	58141	1
1460·9	53359	1	1071·1	58067	1
1517·9	52824	3	1075·6	58007	1
from 1571·0	52381 } 1		1077·0	57988	1
to 1572·4	52369 }		1092·1	57776	2
1573·0	52364	2	*1302·0	55114	1
1623·1	51984	1	*1303·4	55097	2
from 1629·2	51937 } 2		1317·6	54931	1
to 1630·4	51931 }		1345·4	54617	1
1683·1	51544	1	from 1486·8	53110 } 2	
1725·5	51243	1	*to 1489·2	53087 }	
*1777·5	50877	2	*1622·3	51990	1
from 1782·4	50843 } 1		*1623·3	51982	1
to 1784·5	50823 }		1716·6	51307	2
1938·8	49780	2	1728·8	51219	2
2052·3	48899	1	from 1894·5	50036 } 2	
2221·5	47473	1	*to 1895·2	50082 }	
			1903·0	50027	1
Di			1940·2	49769	1
1225·0	56028	2	from 1988·6	49408 } 1	
1230·0	55966	1	to 1989·5	49402 }	
from 1364·5	54402 } 1		2003·8	49289	1
to 1365·2	54394 }		2004·7	49282	2
1431·9	53664	1	2031·0	49043	2
1471·1	53261	1	2081·0	48655	2
from 1518·6	52818 } 1		2121·4	48314	1
*to 1519·4	52810 }		2208·2	47587	2
1536·0	52669	1	2214·5	47533	2
1541·4	52619	1	2217·8	47506	2
1548·9	52556	2			
*1567·5	52406	1	**Pd**		
1709·2	51359	2	1114·7	57460	1
			*1146·2	57038	2
La			1164·9	56789	2
from 1411·6	53885 } 2		1185·6	56524	1
*to 1412·8	53871 }		1264·6	55551	2
1416·8	53827	2	1269·0	55489	2

TABLE (continued).

Kirchhoff's measure.	Corrected wave-length, m.m. 0·000.		Kirchhoff's measure.	Corrected wave-length, m.m. 0·000.	
1279·1	55380	1	2123·6	48295	2
from 1400·0	54007	} 2	2162·0	47973	2
*to 1400·7	54000				
1430·1	53683	1	Pt		
1447·0	53509	1	1325·7	54838	1
1477·0	53202	1	from 1488·2	53097	} 3
1495·2	53030	3	to 1489·0	53089	
1540·0	52632	1	1576·8	52326	1
from 1566·5	52414	} 2	from 1806·1	50678	} 2
to 1567·1	52409		*to 1806·9	50673	
1601·4	52149	1	2057·0	48857	1
from 1660·0	51712	} 3			
to 1660·7	51707		(Ru, Ir)		
1732·9	51190	2	1348·3	54582	2
1801·9	50708	1	*1489·9	53082	1
2062·0	48814	2			

Atmospheric Lines.

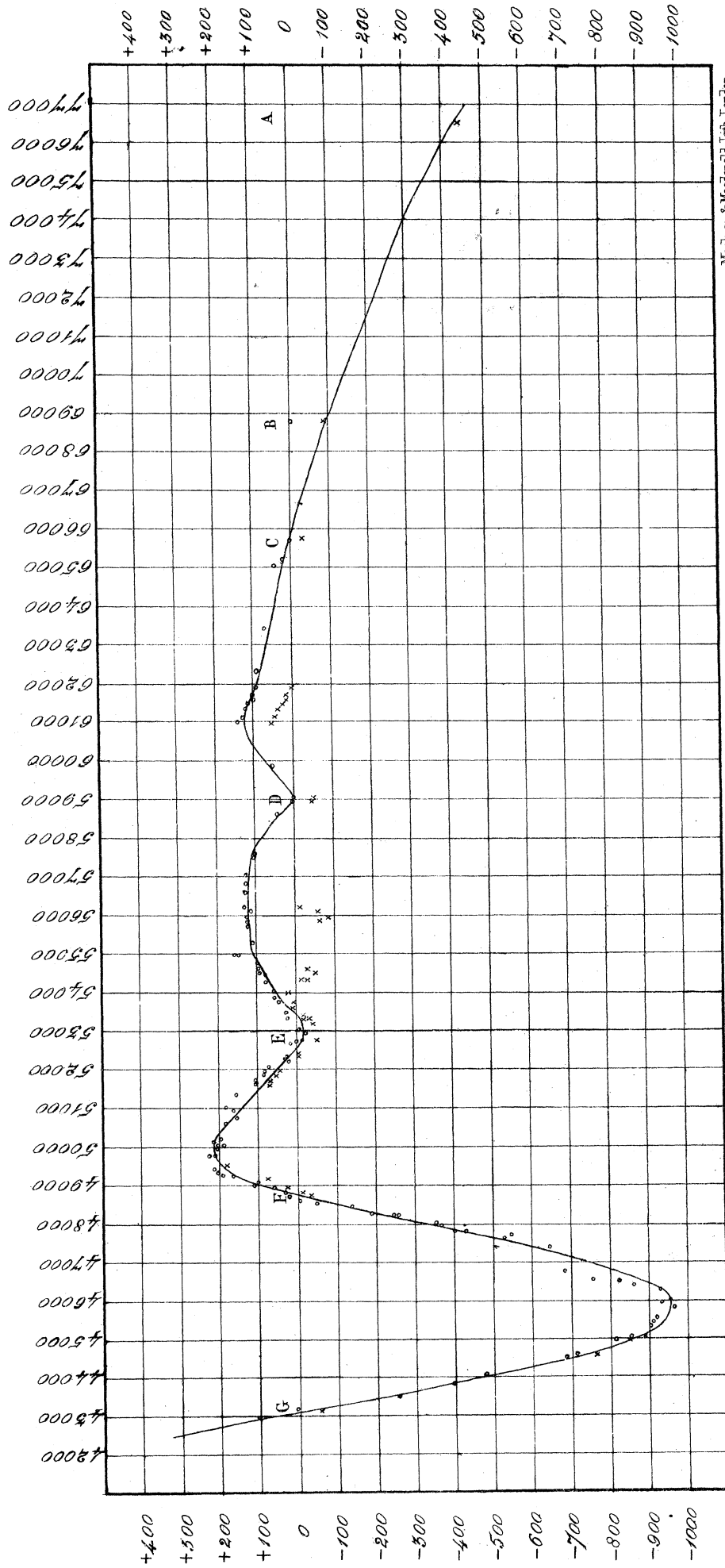| Kirchhoff's measure.	Corrected wave-length, m.m. 0·000.		Kirchhoff's measure.	Corrected wave-length, m.m. 0·000.	
711·4	65252		977·7	59504	
948·0	60062		982·0	59429	
949·4	60037		982·3	59424	
949·8	60029		988·9	59304	
951·7	59992		989·2	59299	
954·2	59945		989·6	59291	
958·8	59859		993·1	59230	
959·6	59845		993·4	59220	
961·9	59800		998·1	59139	
963·7	59764		999·2	59120	
964·4	59753		1000·0	59106	
965·7	59730		1001·4	59084	
968·7	59669		1005·8	59004	
969·0	59668		1008·3	58968	
969·6	59657		1009·2	58955	
970·5	59640		1010·5	58936	
972·1	59608		1013·9	58888	
974·3	59568		1015·1	58871	
975·0	59556		1016·4	58852	
975·7	59540		1017·7	58834	
976·1	59534		1018·2	58826	
977·4	59510				

Measures of Wave-Lengths, in Millimetres, for the Spectral Lines produced by Air and different Metals: collected from the Tables in the Phil. Trans. 1868, and corrected by the general Table of Corrections above.

Air. m.m. 0·000.	Ba m.m. 0·000.	Ca m.m. 0·000.	Cr m.m. 0·000.	Fe m.m. 0·000.	La m.m. 0·000.	Na m.m. 0·000.	Pd m.m. 0·000.
65734	65060	43135	54164	54222	53884	59057	52409
65716	61520	43079	52148	54173	53871	58989	52149
65696	61208	43049	52126	54125	53827		51712
65252	58626		52110	54111	53464	**Ni**	51707
64896	57902	**Cd**		54039	52107	61257	51190
60084	55438	64494	**Cu**	53989	51948	61178	50707
60063	55283	46898	57920	53896	51902	59018	48814
60037	54324		53012	53773	48179	58666	48296
60029	49402	**Ce**	52248	53759		54849	47974
59992	49073	56467	51607	53734	**(La, Di)**	51838	
59944	45626	55727	51131	53704	58727	51757	**Pt**
59860	45329	55644	46618	53465	58162	51625	54838
59845	45327	54799		53456	58142	51538	53097
59800		54764	**Di**	53341	58067	51494	53089
59764		54721	56028	53338	58007	51443	52336
59753	**Ca**	54170	55966	53302	57988	51230	50678
59730	67232	53988	54402	53234	57776	51076	50673
59669	65083	53591	54394	53102	55114	51071	48857
59668	65026	53349	53664	52930	55097	50887	45067
59657	64795	52824	53261	52908	54931	50883	
59640	64727	52381	52818	52782	54617	50439	**(Ru, Ir)**
59608	64595	52369	52810	52772	53110	50265	63579
59568	64494	52364	52669	52739	53087	49909	54582
59556	61798	51984	52619	52391	51990	49868	53082
59540	61725	51938	52556	52332	51982	49418	
59534	61311	51931	52406	51990	51307	49254	**Sr**
59510	61113	51544	51359	51981	51219	49117	64173
59504	58666	51243		51783	50087	48790	55431
59429	56118	50876	**Fe**	51757	50082	48719	54899
59424	56102	50843	64999	51742	50027	48603	43119
59304	56072	50826	64094	51693	49769	48388	43116
59299	56033	49780	63115	51467	49408	48372	43113
59291	55988	48899	62404	51411	49402	47953	
59230	55972	47472	62013	50274	49288	47661	**Zn**
59213	55906		61465	49617	49282	47246	63734
59139	53544	**Co**	60774	49615	49074	46580	48186
59120	52782	61311	60393	49304	48654		47323
59106	52731	54916	59250	49279	48313	**Pd**	46921
59083	52717	53589	57720	49263	47586	57460	
59004	52698	53578	56332	48991	47533	57038	
58967	52694	53492	56250	48982	47506	56789	
58955	51953	53483	56118	48849	44351	56524	
58936	50501	52893	55952	48777		55551	
58888	48849	52761	55846	48770	**Li**	55499	
58871	44616	52739	55814	48645	61112	55380	
58852	44611	52414	55777	44198		54007	
58834	44607	48735	54711	44091	**Mg**	54000	
58826	44400	48218	54637	43878	51902	53683	
	44398	48013	54554	43874	51793	53509	
Au	44309	47889	54531	43323	51742	53202	
62869	44307	47600	54420	43142		53030	
48013	43262	45915	54375	43139		52632	
	43139	45389	54312			52414	

These values of the wave-lengths are, I trust, worthy of confidence. They may be liable to errors of 20 or perhaps 30 in the last figures, but, I think, to no greater error.

A very elaborate investigation of the values of Wave-lengths of the Spectral Lines of the Elements has been published by Dr. WOLCOTT GIBBS, in the American Journal of Science and Arts, vol. xlvii. The basis upon which Dr. GIBBS proceeds is not the same as mine (for instance, in the relative merit attached to ÅNGSTRÖM and DITSCHEINER); some measures by HUGGINS and VAN DER WILLINGEN are employed, and some new lines introduced; and the fundamental treatment is different. The results, therefore, are not identical with mine. But, as far as I have examined, the differences between Dr. GIBBS's numbers and my own are small; not greater, I think, than can be explained by such errors as I have specified in the last paragraph.

I have not yet succeeded in finding any relation between the values of wave-length for different lines of the same element, which can suggest any mechanical explanation of their origin.