

LONDON WEATHER CENTRE MEMORANDUM No. 3

A pilot study of differences between daily temperature extremes at Kingsway and London (Heathrow) Airport for the years 1960 and 1961

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Introduction. At the London Weather Centre, estimates of temperature for London and Southeast England are usually based upon the values estimated for Heathrow. This is particularly so in the case of the temperature forecasts made for the C.E.G.B. Thames North and Thames South Control Areas. From time to time, however, estimates of temperature are required for the thickly built-up areas of London. In particular, temperature forecasts are required for the heating of office buildings during the winter months. With the advent of thermal storage heaters, such requests are likely to increase in the future. A study of temperature differences between Central London and the outer suburbs would, therefore, appear to be useful even if it gave negative results. As it is probable that the use of air conditioning will also increase in the future, the summers were included. The whole of the two years 1960 and 1961 were studied to decide whether it would be useful to make such an investigation over a longer period.

Data. As the temperature at Kingsway was, in general, higher than that at Heathrow, frequency tables were produced for each of the 24 months showing how the difference (LWC - LAP)\* in maxima (0900 to 2100) and the difference (LWC - LAP)\* in minima (2100 to 0900) varied with the maximum or minimum, respectively, recorded at Heathrow. These frequency tables are given in Appendix I, the Heathrow temperatures being divided into 5 deg.F. groups. In Appendix II, the monthly tables have been combined to give frequency tables for the whole year.

Results. The frequency tables given in Appendix I and Appendix II show that the difference between the daily maxima at Kingsway and Heathrow varied between +8 and -7, with a tendency for low temperatures at Heathrow to be associated with the larger positive differences of temperature (LWC - LAP) and for the high temperatures at Heathrow to be associated with the larger negative differences (LWC - LAP). The difference between the daily minima varied between +13 and -4 and again, it was found that there was a tendency for low temperatures at Heathrow to be associated with large negative differences (LWC - LAP) and high temperatures to be associated with large negative or small positive differences (LWC - LAP).

The largest positive and negative differences and the mean difference between the daily maximum and minimum temperatures at Kingsway and Heathrow have been extracted month by month for each year from Appendix I and are reproduced in Table 1.

\* The following abbreviations are used in the tables:-

LWC = London Weather Centre (Kingsway)

LAP = London (Heathrow) Airport

(Temperatures measured in degrees Fahrenheit)

/Table 1



Table 1. Differences between Daily Maximum and Minimum Temperatures at Kingsway and Heathrow for each month of the years 1960 and 1961

Month	Year	MAXIMUM			MINIMUM		
		Largest Positive Diff.	Largest Negative Diff.	Mean Diff.	Largest Positive Diff.	Largest Negative Diff.	Mean Diff.
January	1960	+8	-2	+1	+7	0	+3
	1961	+3	-2	+1	+8	-2	+3
February	1960	+4	-1	+1	+9	-1	+3
	1961	+6	-1	+1	+6	0	+2
March	1960	+3	-4	+1	+4	-4*	+1
	1961	+4	-5	+1	+13	+1	+6
April	1960	+4	-3	-1	+7	-1	+3
	1961	+3	-3	0	+8	-1	+3
May	1960	+4	-4	-1	+9	-1	+3
	1961	+3	-6	-1	+9	-2	+3
June	1960	+2	-6	-2	+7	-2	+2
	1961	+2	-2	0	+8	0	+4
July	1960	+3	-2	0	+5	0	+2
	1961	+3	-7	-1	+10	0	+4
August	1960	+3	-5	0	+8	-1	+3
	1961	+2	-4	-1	+6	-1	+2
September	1960	+2	-3	-1	+8	0	+3
	1961	+3	-6	0	+8	0	+3
October	1960	+5	-4	0	+7	0	+2
	1961	+4	-2	+1	+11	-1	+4
November	1960	+3	-1	+1	+11	0	+4
	1961	+3	-2	+1	+12	-1	+3
December	1960	+4	-1	+1	+7	0	+3
	1961	+6	-2	+1	+9	-1	+4

\* The minimum temperature at Kingsway was higher than the Heathrow minimum on each night of March 1961.

Dealing firstly with the minimum temperatures, for which the relationship between the two stations appears to be simpler than that for the maximum temperatures, Table 1 shows that, on average, the daily minimum temperature at Heathrow is approximately three degrees Fahrenheit lower than at Kingsway, throughout the year. From Appendix II it can be seen that there were only 20 nights, during the two years, on which the minimum temperature at Heathrow exceeded that at Kingsway. They were distributed fairly evenly over the year, as can be seen from Appendix I, though none of them occurred in July or September. On the other hand, there were thirteen nights on which the temperature at Kingsway exceeded that at Heathrow by 10 deg.F. or more, twelve of them occurring in one year (1961). These occasions are listed in Table 2.

/Table 2



Table 2. Occasions during 1960 and 1961 when the minimum temperature at Kingsway exceeded that at Heathrow by 10 deg.F. or more

Year	Date	Difference	(LWC - LAP)
1960	Nov. 19	+11	42 - 31
1961	Mar. 4	+13	43 - 30
"	Mar. 5	+12	44 - 32
"	Mar. 6	+13	47 - 34
"	Mar. 8	+12	48 - 36
"	Mar. 16	+13	49 - 36
"	Mar. 17	+10	53 - 43
"	July 1	+10	69 - 59
"	Oct. 2	+10	53 - 43
"	Oct. 12	+11	50 - 39
"	Oct. 29	+11	45 - 34
"	Nov. 9	+12	42 - 30
"	Nov. 24	+10	38 - 28

With one exception, these all occurred in March, October and November and might, therefore, be characteristic of these months at the beginning and end of winter. A longer period of study would be necessary to show whether this is so. These large differences all occurred on nights with mainly clear skies and a very light southwesterly drift of air over Southeast England. This usually meant that pressure was high to the southeast of London, with an anticyclone not far away over the Continent but it is noteworthy that, on November 9th, 1961, the 0600 G.M.T. pressure at Heathrow was only 994.3 mb., the clear skies occurring behind a cold front which moved eastwards over the London area during the morning of November 8th. A wave depression moved northwards along the cold front over the North Sea during the night (8th/9th). There were 198 occasions during the two years when the minimum temperature at Kingsway exceeded that at Heathrow by 5 deg.F. or more.

Turning now to the difference of maximum temperature, Table 1 shows that there is a definite tendency for the largest positive differences to occur during the winter half of the year and for the largest negative differences to occur during the summer half of the year. This is brought out very clearly in Table 3. It gives all the occasions, during the two years considered, on which the maximum temperatures at Kingsway and Heathrow differed by 5 deg.F. or more. An examination of the synoptic charts for the days in question showed that all these large differences between the maximum temperatures occurred in situations giving light winds - usually a ridge or col.

/Table 3



Table 3. Occasions during 1960 and 1961 when the maximum temperatures at Kingsway and Heathrow differed by 5 deg.F. or more

1960			1961		
Date	Difference	(LWC - LAP)	Date	Difference	(LWC - LAP)
Jan. 7	+8	44 - 36			
Jan. 28	+5	47 - 42			
Jan. 29	+6	49 - 43			
			Feb. 17	+6	54 - 48
			Mar. 9	-5	49 - 54
			May 28	-6	55 - 61
June 21	-6	72 - 78			
			July 19	-7	66 - 73
Aug. 7	-5	70 - 75			
			Sept. 1	-6	71 - 77
Oct. 17	+5	54 - 49			
			Dec. 15	+6	43 - 37

As was stated earlier, there is a tendency in the frequency tables of Appendix I and II for Kingsway temperatures to be relatively high when Heathrow temperatures are low and for Kingsway temperatures to be relatively low when Heathrow temperatures are high, but a closer look at the tables of Appendix II does suggest that this does not apply where the yearly extremes of temperature (highest and lowest maximum and minimum values) are concerned, the effect being greatest at temperatures a little below the higher extreme and a little above the lower extreme at Heathrow. Thus, when Heathrow has an exceptionally high or low maximum or minimum temperature, Kingsway is also likely to have one.

Conclusions. The minimum temperature at Kingsway is almost invariably higher than the corresponding minimum temperature at Heathrow, the difference varying (during the two years studied) between +13 deg.F. and -4 deg.F., the mean difference being approximately +3 deg.F.

The range of difference in maximum temperatures is slightly less, varying between +8 deg.F. and -7 deg.F., with a tendency for maximum temperatures to be higher at Kingsway than at Heathrow during the winter half of the year and lower at Kingsway than at Heathrow during the summer half of the year.

Although there is a tendency for Kingsway temperatures to be relatively low when the Heathrow temperature is high and relatively high when the Heathrow temperature is low, for both maximum and minimum values, this does not appear to apply to the same extent for very high or very low Heathrow temperatures.

Finally, with especial regard to this latter point, it is considered that an investigation over a longer period would be profitable. As the problem is usually more vital at the lowest temperatures, the greatest benefit would probably be obtained from a study of minimum temperatures for the period October to March inclusive over a number of years.



January 1960 Maxima

LAP. Range	30-34	35-39	40-44	45-49	50-54	Total
Diff. (LWC - LAP)						
+8		1				1
+7						
+6			1			1
+5			1			1
+4						
+3	1					1
+2	1	2	1	1	3	8
+1		1	1	2	4	8
0		2	1	3	2	8
-1		1		1		2
-2			1			1
Total	2	7	6	7	9	31

January 1961 Maxima

LAP. Range	30-34	35-39	40-44	45-49	50-55	Total
Diff. (LWC - LAP)						
+3				2		2
+2		2	3	1	1	7
+1	1			6		7
0		1	3	3	2	9
-1		1	2		2	5
-2				1		1
Total	1	4	8	13	5	31



January 1960 Minima

LAP. Range	20-24	25-29	30-34	35-39	40-44	45-49	50-54	Total
Diff. (LWC - LAP)								
+7			1					1
+6		1		2				3
+5		1	1					2
+4		1	1					2
+3			1	2				3
+2	1	1	2		1	3		8
+1		1	3			3	2	9
0				2	1			3
Total	1	5	9	6	2	6	2	31

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January 1961 Minima

LAP. Range	25-29	30-34	35-39	40-44	Total
Diff. (LWC - LAP)					
+8	1				1
+7		1			1
+6	1	4	1		6
+5	1	1	2		4
+4		1	1		2
+3			2		2
+2		1	3	3	7
+1			3	1	4
0		1	2		3
-1					
-2		1			1
Total	3	10	14	4	31

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February 1960. Maxima

LAP. Range	35-39	40-44	45-49	50-54	55-59	60-64	Total
Diff. (LWC - LAP)							
+4	1						1
+3			1	1			2
+2		2	2				4
+1	1	6	1		1		9
0	1	2	1	1		2	7
-1		3		3			6
Total	3	13	5	5	1	2	29

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February 1961. Maxima

LAP. Range	45-49	50-54	55-59	60-64	Total
Diff. (LWC-LAP)					
+6	1				1
+5					
+4					
+3		1			1
+2	5			1	6
+1	3	8	1		12
0	1	4	1		6
-1	1	1			2
Total	11	14	2	1	28

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February 1960. Minima

LAP. Range	20-24	25-29	30-34	35-39	40-44	45-49	Total
Diff. (LWC - LAP)							
+9		2	1				3
+8				1			1
+7							
+6	1			1			2
+5		1	1	1	1	1	5
+4					1	1	2
+3		1		2			3
+2				1		1	2
+1			2	2	1	1	6
0			1	2			3
-1			1	1			2
Total	1	4	6	11	3	4	29

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February 1961. Minima.

LAP. Range	30-34	35-39	40-44	45-49	Total
Diff. (LWC - LAP)					
+6		1			1
+5	1	1	1		3
+4			2	1	3
+3		2		2	4
+2		3	1	1	5
+1		1	4	2	7
0			3	2	5
Total	1	8	11	8	28

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March 1960. Maxima

LAP. Range	35-39	40-44	45-49	50-54	55-59	60-64	Total
Diff. (LWC - LAP)							
+3			1	2			3
+2				2			2
+1					1		1
0		3	2	2	3		10
-1	1		3				4
-2			2	3		1	6
-3		1		1	1		3
-4				1	1		2
Total	1	4	8	11	6	1	31

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March 1961. Maxima

LAP. Range	45-49	50-54	55-59	60-64	65-69	70-74	Total
Diff (LWC-LAP)							
+4				1			1
+3				1	1		2
+2	1	1	3	1		1	7
+1	2	1	6			1	10
0	1	2	3				6
-1	1		2	1			4
-2							
-3							
-4							
-5		1					1
Total	5	5	14	4	1	2	31

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March 1960. Minima

LAP. Range	30-34	35-39	40-44	45-49	Total
Diff. (LWC-LAP)					
+4	1	1	1		3
+3		2	1		3
+2		3		2	5
+1		2	2	3	7
0		5	5		10
-1			1	1	2
-2					
-3					
-4			1		1
Total	1	13	11	6	31

March 1961. Minima

LAP. Range	25-29	30-34	35-39	40-44	45-49	50-54	Total
Diff. (LWC-LAP)							
+13		2	1				3
+12		1	1				2
+11							
+10				1			1
+9		2	1				3
+8			1				1
+7		2					2
+6		1	2				3
+5	1						1
+4			4	2			6
+3		1	2				3
+2					2	1	3
+1					3		3
Total	1	9	12	3	5	1	31



April 1960. Maxima

LAP Range	50-54	55-59	60-64	65-69	Total
Diff. (LWC-LAP)					
+4			1		1
+3					
+2	1		1		2
+1	1	2	4		7
0	1				1
-1	3	4	1		8
-2	3	3	1	1	8
-3		1	2		3
Total	9	10	10	1	30

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April 1961. Maxima

LAP Range	45-49	50-54	55-59	60-64	Total
Diff. (LWC-LAP)					
+3			1		1
+2			1	3	4
+1			4		4
0		1	4	5	10
-1	1		2	4	7
-2			1	2	3
-3		1			1
Total	1	2	13	14	30

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April 1960. Minima

LAP. Range	30-34	35-39	40-44	45-49	Total
Diff. (IWC-LAP)					
+7		1			1
+6	2	1	1	1	5
+5	2	2		1	5
+4	1		2		3
+3		1	4	1	6
+2		2	2	2	6
+1			1	1	2
0		1			1
-1				1	1
Total	5	8	10	7	30

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April 1961. Minima

LAP. Range	35-39	40-44	45-49	50-54	Total
Diff. (IWC-LAP)					
+8	1				1
+7	1				1
+6		1			1
+5		1	1		2
+4		1	4		5
+3		1	4	1	6
+2		1	4		5
+1		1	2	2	5
0		1	2		3
-1			1		1
Total	2	7	18	3	30

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May 1960. Maxima

LAP. Range	45-49	50-54	55-59	60-64	65-69	70-74	75-79	Total
Diff. (LWC-LAP)								
+4						1		1
+3				1				1
+2				1		1		2
+1					2	2		4
0	1	1	1		1		1	5
-1		2	1	1	2	1		7
-2				2	2	1		5
-3					2	2	1	5
-4							1	1
Total	1	3	2	5	9	8	3	31

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May 1961. Maxima

LAP. Range	55-59	60-64	65-69	70-74	75-79	Total
Diff. (LWC-LAP)						
+3		1				1
+2						
+1	1	3		1	1	6
0	1	2	2			5
-1	1	4				5
-2	6	3	1			10
-3		2				2
-4		1				1
-5						
-6		1				1
Total	9	17	3	1	1	31

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May 1960. Minima

LAP. Range	40-44	45-49	50-54	55-59	Total
Diff. (LWC-LAP)					
+9		1			1
+8	2				2
+7		1			1
+6	1				1
+5		2			2
+4	2				2
+3	3		4	1	8
+2			1		1
+1			2		2
0		3	2	2	7
-1			3	1	4
Total	8	7	12	4	31

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May 1961. Minima

LAP. Range	30-34	35-39	40-44	45-49	50-54	Total
Diff. (LWC-LAP)						
+9	1			1		2
+8						
+7		1		1		2
+6		1	1			2
+5			1			1
+4		1		3		4
+3			1	4		5
+2			1	4	1	6
+1				2	2	4
0			1	2		3
-1				1		1
-2					1	1
Total	1	3	5	18	4	31

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June 1960 Maxima

LAP. Range	60-64	65-69	70-74	75-79	80-84	Total
Diff.(LWC - LAP)						
+2				1	1	2
+1		1				1
0	2			1		3
-1	1	4	2		1	8
-2	1	1	1	1		4
-3	1	2	1	2	2	8
-4		1		1		2
-5						
-6				2		2
Total	5	9	4	8	4	30

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June 1961 Maxima

LAP. Range	50-54	55-59	60-64	65-69	70-74	75-79	80-84	85-89	Total
Diff.(LWC - LAP)									
+2				1					1
+1	1		2	1					4
0			3		6	1	1		11
-1			1	1	6		2	1	11
-2					2	1			3
Total	1		6	3	14	2	3	1	30

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June 1960 Minima

LAP. Range	45-49	50-54	55-59	60-64	Total
Diff.(LWC - LAP)					
+7	1				1
+6					
+5	1	1	1		3
+4	1	1	1		3
+3		1	1		2
+2	2	4	2	1	9
+1	1	2	1	1	5
0		1	3	2	6
-1					
-2			1		1
Total	6	10	10	4	30

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June 1961 Minima

LAP. Range	40-44	45-49	50-54	55-59	60-64	Total
Diff.(LWC - LAP)						
+8	1	2				3
+7		3		1		4
+6		2	2	2		6
+5			1			1
+4		2	1			3
+3		1				1
+2			4	3		7
+1		1	1	1		3
0			1		1	2
Total	1	11	10	7	1	30

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July 1960 Maxima

LAP. Range	60-64	65-69	70-74	Total
Diff. (LWC - LAP)				
+3	1			1
+2	3	1		4
+1		3	2	5
0	1	2		3
-1		6	7	13
-2		4	1	5
Total	5	16	10	31

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July 1961 Maxima

LAP. Range

Diff. (LWC - LAP)	55-59	60-64	65-69	70-74	75-79	80-84	85-89	90-94	Total
+3	1			1					2
+2									
+1		1		1					2
0				3	1				4
-1			6	2	1			1	10
-2			1	3	5				9
-3				3					3
-4									
-5									
-6									
-7				1					1
Total	1	1	7	14	7			1	31

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July 1960 Minima

LAP. Range	45-49	50-54	55-59	60-64	Total
Diff.(LWC - LAP)					
+5	2	1			3
+4		3			3
+3		3	1		4
+2		2	6	1	9
+1		2	8	1	11
0			1		1
Total	2	11	16	2	31

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July 1961 Minima

LAP. Range	45-49	50-54	55-59	60-64	Total
Diff.(LWC - LAP)					
+10			1		1
+9					
+8				1	1
+7	1	1			2
+6	1	2			3
+5		3	1		4
+4	1	1	1		3
+3		4	1		5
+2		1	5		6
+1		2	1	1	4
0		2			2
Total	3	16	10	2	31

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August 1960 Maxima

LAP. Range	55-59	60-64	65-69	70-74	75-79	Total
Diff.(LWC - LAP)						
+3				1		1
+2						
+1			5	3		8
0		1	8	3		12
-1	1		2	4		7
-2			2			2
-3						
-4						
-5					1	1
Total	1	1	17	11	1	31

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August 1961 Maxima

LAP. Range	60-64	65-69	70-74	75-79	80-84	85-89	90-94	Total
Diff.(LWC - LAP)								
+2		1						1
+1	2			1				3
0	1	1	2	1				5
-1		1	5	1				7
-2		2	5					7
-3		1	2	2			1	6
-4				2				2
Total	3	6	14	7			1	31

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August 1960 Minima

LAP. Range	45-49	50-54	55-59	60-64	Total
Diff.(LWC - LAP)					
+8	1				1
+7					
+6		2			2
+5	3	4			7
+4	1	2			3
+3		1	3		4
+2	1	1	8		10
+1		1	2	1	4
Total	6	11	13	1	31

---

August 1961 Minima

LAP. Range	45-49	50-54	55-59	60-64	Total
Diff.(LWC - LAP)					
+6	1		1		2
+5	1	1			2
+4	1	1	2		4
+3		5	1		6
+2		1	5		6
+1		2	5		7
0			1	2	3
-1				1	1
Total	3	10	15	3	31

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September 1960 Maxima

LAP. Range	55-59	60-64	65-69	70-74	75-79	Total
Diff.(LWC - LAP)						
+2		1		1		2
+1	1	1	2	1		5
0	1	4	5	1		11
-1			1			1
-2	1	3	2	1	1	8
-3			2	1		3
Total	3	9	12	5	1	30

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September 1961 Maxima

LAP. Range	55-59	60-64	65-69	70-74	75-79	80-84	Total
Diff.(LWC - LAP)							
+3		1					1
+2		1			1		2
+1	1	2	4	1			8
0			1	1	1		3
-1		3	1	5	2		11
-2					1		1
-3			1		1		2
-4						1	1
-5							
-6					1		1
Total	1	7	7	7	7	1	30

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September 1960 Minima

LAP. Range	40-44	45-49	50-54	55-59	60-64	Total
Diff.(LWC - LAP)						
+8	1		1			2
+7						
+6		1	1			2
+5		1		1		2
+4		2	2			4
+3	1	2	3			6
+2		1	2			3
+1		1	3	3		7
0			3		1	4
Total	2	8	15	4	1	30

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September 1961 Minima

LAP. Range	45-49	50-54	55-59	60-64	Total
Diff.(LWC - LAP)					
+8	1				1
+7	1	1			2
+6	1				1
+5		1			1
+4	1	1			2
+3	3	1	3		7
+2		2	4	2	8
+1			4		4
0			3	1	4
Total	7	6	14	3	30

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<u>October 1960 Maximum</u>						
LAP Range Diff. (LWC-LAP)	45-49	50-54	55-59	60-64	65-69	Total
+5	1					1
+4						
+3						
+2			1			1
+1		5	4	1	1	11
0		3	3	1	1	8
-1			3	1	1	5
-2			1	1	1	3
-3				1		1
-4			1			1
Total	1	8	13	5	4	31

<u>October 1961 Maximum</u>							
LAP Range Diff. (LWC-LAP)	45-49	50-54	55-59	60-64	65-69	70-74	Total
+4		1					1
+3							
+2	1		3	1	1		6
+1		1	6	3	1		11
0		2	3	2	1		8
-1				1	1	1	3
-2				1	1		2
Total	1	4	12	8	5	1	31

Appendix I



October 1960 Minimum

LAP Range Diff. (LWC-LAP)	30-34	35-39	40-44	45-49	50-54	55-59	Total
+7	1						1
+6	1	1					2
+5			1				1
+4		1		2	3		6
+3				1	1		2
+2			3		2	1	6
+1				4	4		8
0					4	1	5
Total	2	2	4	7	14	2	31

October 1961 Minimum

LAP Range Diff. (LWC-LAP)	30-34	35-39	40-44	45-49	50-54	55-59	60-64	Total
+11	1	1						2
+10			1				1	1
+9								
+8								
+7								
+6			2		1			3
+5	1		1	2				4
+4			1	1		1		3
+3			1	3	1			5
+2				4	2	1		7
+1					1	1		2
0			1	1			1	3
-1				1				1
Total	2	1	7	12	5	3	1	31

Appendix I



November 1960 Maximum

LAP Range Diff. (LWC-LAP)	45-49	50-54	55-59	60-64	Total
+3	1	1			2
+2	1	7		1	9
+1	3	5	3		11
0	3	1	3		7
-1		1			1
Total	8	15	6	1	30

November 1961 Maximum

LAP Range Diff. (LWC-LAP)	40-44	45-49	50-54	55-59	60-64	Total
+3		1				1
+2	1		2			3
+1	1	5	4	1		11
0		7	2		1	10
-1		1	2	1		4
-2			1			1
Total	2	14	11	2	1	30

Appendix I



<u>November 1960 Minimum</u>						
LAP Range Diff. (LWC-LAP)	30-34	35-39	40-44	45-49	50-54	Total
+11	1					1
+10						
+ 9						
+ 8	2	1				3
+ 7	1					1
+ 6	1	1	2			4
+ 5		1	3			4
+ 4		1	2			3
+ 3		1	2	4		7
+ 2			2	2	1	5
+ 1					1	1
0				1		1
Total	5	5	11	7	2	30

	<u>November 1961 Minimum</u>						
LAP Range Diff. (LWC-LAP)	25-29	30-34	35-39	40-44	45-49	50-54	Total
+12		1					1
+11							
+10	1						1
+ 9		1					1
+ 8							
+ 7	1	1					2
+ 6			1		1		2
+ 5		1	1	1			3
+ 4		1			2		3
+ 3			1				1
+ 2			1	1	2		4
+ 1			1	1	3	1	6
0				3	2		5
- 1				1			1
Total	2	5	5	7	10	1	30



December 1960 Maximum

LAP. Range	35-39	40-44	45-49	50-54	55-59	Total
Diff.(LWC - LAP)						
+4	1					1
+3						
+2	1	4	6	1		12
+1	1	8	2	1		12
0	1	2			1	4
-1		2				2
Total	4	16	8	2	1	31

December 1961 Maximum

LAP. Range	30-34	35-39	40-44	45-49	50-54	55-59	Total
Diff.(LWC - LAP)							
+6		1					1
+5							
+4							
+3	1	1		1			3
+2		3	2	1		4	10
+1		2	1	3	1		7
0	2	1	1			2	6
-1	1	1			1		3
-2		1					1
Total	4	10	4	5	2	6	31



December 1960 Minimum

LAP. Range	30-34	35-39	40-44	45-49	Total
Diff.(LWC - LAP)					
+7	1				1
+6	3	1			4
+5	5	2			7
+4	2	2			4
+3	1	1		2	4
+2	1	1	1		3
+1		4	2		6
0		2			2
Total	13	13	3	2	31

December 1961 Minimum

LAP. Range	20-24	25-29	30-34	35-39	40-44	45-49	50-54	Total
Diff.(LWC - LAP)								
+9		1	1	1				3
+8	1		1					2
+7		1		1				2
+6		2		1				3
+5		1	1		1			3
+4	1	1	2			1		5
+3		1		2		1		4
+2		1					1	2
+1		1			1		1	3
0			1	1				2
-1			1			1		2
Total	2	9	7	6	2	3	2	31