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DEPARTMENT OF SUPPLY

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SERIES C (II) COSMIC RAYS

PUBLICATION No. 117

COSMIC RAY RECORDS,
CASEY 1969

by

P. JOHNSTONE & J. R. BILSON

ISSUED BY THE ANTARCTIC DIVISION
DEPARTMENT OF SUPPLY, MELBOURNE
1972

89158

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Antartic Division, Department of Supply, Melbourne

(Manuscript received May, 1971)



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I. INTRODUCTION

This publication is the seventh of a series presenting detailed results obtained with continuous recording cosmic ray equipment at the Australian National Antarctic Research Expeditions (ANARE) station Wilkes, Antarctica (geographic coordinates $66^{\circ} 25'S$, $110^{\circ} 27'E$, geomagnetic coordinates $78^{\circ}S$, $179^{\circ}E$). The Wilkes station was closed in April 1969 and the equipment was transferred to the nearby replacement station Casey (geographic coordinates $66^{\circ} 17'S$, $110^{\circ} 32'E$, geomagnetic coordinates $78^{\circ}S$, $179^{\circ}E$).

The previous publications of the series contain records of observations made from the time of installation of the equipment, March 1962, until December 1968. The records presented here are for the period January to December 1969. The work has been an approved project of the Antarctic Division of the Department of Supply, carried out by the Physics Department of the University of Tasmania under the supervision of Dr A. G. Fenton of the University.

A 12-counter neutron monitor has been used, closely following the standard design recommended for observations during the IGY (Simpson, 1956). It comprises 3 identical sections, each containing 4 counters, the power supplies and electronic recording circuits for each section being completely independent.

Hourly-scaled count totals are read manually from banks of electromechanical registers connected so that counting takes place on a different register during each hour of a two-day period. Daily check totals are available from separate registers. Short-term records are available from multipen event recorder charts. The intensity figures tabulated are the sums of count totals from all sections, unless it is indicated that the figure is estimated from the total of two sections only. The reliability of the three sections is checked by examining the ratios of their separate daily count totals.

Whilst at Wilkes the equipment was located in a flat-roofed laboratory 10 metres above sea level. The Casey laboratory is also flat-roofed, and is 20 metres above sea level.

The neutron monitor data have been corrected to a standard barometric pressure of 980 millibars, using an exponential correction and an attenuation length of 138 gm/cm^2 .

Daily sums and means are given, except where figures are not available, for all hours of the day. When figures are missing, the mean is omitted and the number of hours for which data are available is shown in brackets.

Indicated in Tables 14-39 are all hours for which the mean hourly wind speed exceeded 45 mph and all hours during which 'severe pressure changes' occurred, i.e., periods during which a pressure minimum is preceded and/or followed by pressure changes which exceeded the rate of 2 millibar per hour for more than 6 hours (Jacklyn, 1963).

The pressure readings at Casey were found to have serious wind-speed-dependent errors. The errors have been estimated to be of order 1.0 mb at wind speed 30 knots and 4.2 mb at 70 knots. The barometer readings were always less than the true pressure. The effect is similar to that found at Mawson in 1966 (Ellyard and Vrana, 1968) except that no noticeable effect due to changes in wind direction was detected. The tabulated pressure data for Casey, 1969, have been corrected for these errors using an empirical formula. These amended data have been used to pressure-correct the Casey neutron data. The method used cannot entirely eliminate all errors, and the data for indicated periods of high wind speed should therefore be used with extreme caution.

Attention is drawn to changes in monitor efficiency. A small temporary neutron monitor was operated at Casey for 6 weeks on each side of the transfer date to permit the counting efficiency at Casey to be standardised to the level obtained for Wilkes. The factor thus obtained takes account of the difference in barometer cistern heights at the two stations. To reduce the corrected neutron data for either station to the standard level for Wilkes for 1962-63, the recorded data should therefore be multiplied by the factor(s) quoted at the foot of the appropriate Table.

II. REFERENCES

Ellyard, D. and A. Vrana (1968) ANARE Data Reports No. 105, Cosmic Ray Records, Mawson 1966.

Jacklyn, R. M. (1963) Proceedings of the International Conference on Cosmic Rays, Jaipur. Vol. 2, p. 423.

Simpson, J. A. (1956) Annals of the IGY. Vol. 4, p. 351.

COSMIC RAY RECORDS

Station Wilkes
Year 1969
Month February

Triplex Neutron Monitor
Scale Factor 64

TABLE 2
TABULATED Hourly Count Totals (Uncorrected)

Date	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28
Hour GMT	537	581	546	537	535	566	544	643	604	625	622	571	571	625	610	560	557	579	568	567	559	607	621	593	631	610	579	569
	554	567	539	537	538	568	549	645	611	615	630	582	572	628	609	563	559	580	579	556	556	600	618	594	633	611	579	562
	540	583	541	539	544	567	554	651	613	627	621	568	567	620	604	553	554	575	571	557	564	597	617	585	640	601	574	RF
	542	577	548	543	534	563	555	658	614	638	614	571	575	630	611	556	562	576	576	552	566	610	620	589	635	609	571	567
	RF	579	539	546	554	572	548	664	623	633	619	569	575	626	608	557	562	584	576	566	569	609	622	603	634	605	571	RF
	RF	571	535	553	546	568	567	666	622	631	616	567	574	630	609	561	566	577	573	562	571	603	610	596	630	604	575	562
	550	571	541	551	542	565	562	659	619	638	606	582	570	630	606	558	569	577	577	561	576	610	615	599	630	602	571	564
	555	579	540	545	549	561	563	653	624	633	604	567	577	627	605*	556	567	580	573	562	581	616	605	599	639	602	567	545
	555	570	537	559	548	575	566	645	617	632	603	570	576	637	605*	559	566	581	570	553	572	611	607	616	630	598	565	546
	557	569	538	554	546	574	571	643	616	631	605	570	577	632	603	553	570	587	565	557	590	611	598	613	640	597	578	546
	562	569	536	547	550	569	575	638	628	633	607	564	585	646	597	559	561	584	567	545	586	608	605	612	637	581	566	538
	565	575	537	550	547	564	578	624	624	636	606	565	583	644	584	558	566	583	570	544	590	615	599	614	637	588	574	544
	568	571	532	559	546	570	579	626	620	633	598	569	586	646	592	554	571	580	565	547	581	616	599	RF	638	594	569	531
	563	564	535	555	545	562	586	618	622	641	593	568	595	650	583	559	564	588	564	554	585	614	594	615	633	585	560	527
	568	562	539	547	542	567	585	616	620	638	595	566	609	652	586	563	577	587	567	548	588	617	594	624	626	590	559	518
	571	567	544	541	549	562	584	615	630	635	590	570	596	644	584	556	573	586	561	552	595	608	599	624	629	581	571	531
	572	562	527	536	557	567	591	605	624	644	589	564	597	636	577	555	581	588	570	553	587	606	587	625	622	583	566	524
	579	561	530	541	552	564	604	608	620	647	586	565	595	636	578	558	576	588	563	556	597	609	597	624	625	580	566	531
	577	557	536	537	551	559	622	601	629	648	595	564	610	634	576	557	576	584	565	560	594	609	589	635	620	576	566	517
	584	548	526	532	552	563	622	606	629	635	581	567	621	629	576	556	579	580	559	551	592	610	597	628	613	589	573	520
	584	549	541	535	560	561	614	609	621	623	584	571	627	631	571	552	576	588	566	554	607	616	596	635	623	582	558	525
	567	546	533	545	562	560	630	612	617	636	577	578	617	623	568	555	581	578	554	553	602	604	584	627	607	584	560	518
	575	546	537	538	564	561	637	603	622	623	576	567	614	618	559	556	584	576	561	554	590	607	589	629	622	579	555	519
	568	548	537	535	564	559	645	613	624	624	571	573	609	620	562	563	577	567	561	561	597	612	590	628	612	578	555	521
Total	12389	13572	12896	13062	13178	13567	14031	15121	14893	15199	14388	13668	14178	15194	14163	13377	13674	13953	13621	13325	13995	14625	14452	14107	15086	14209	13628	11825
Daily Mean	(22)	565.5	537.3	544.3	549.1	565.3	584.6	630.0	620.5	633.3	599.5	569.5	590.8	633.1	590.1	557.4	569.8	581.4	567.5	555.2	583.1	609.4	602.2	(23)	628.6	592.0	567.8	(22)

RF = Recording failure. N.B. Normalising factor 1 to 23 = 1.0042, 24 to 28 = 1.0022. * = Estimated from two sections.

COSMIC RAY RECORDS

Station Wilkes
Year 1969
Month April

Triplex Neutron Monitor
Scale Factor 64

TABLE 4
TABLATED Hourly Count Totals (Uncorrected)

Date		01	02	03	04	05	06	07	08	09	10	11	12	13	14	15
Hour	GMT															
01	584	572	560	587	579	519	522	482	RF	RF	618	616	619	633	619	
02	584	578	561	594	569	524	522	489			620	618	626	621	619	
03	587	570	556	594	567	522	516	490			616	617	619	617	625	
04	587	577	560	594	559	521	519	491			614	622	627	623	615	
05	586	580	569	591	564	519	518	488			622	619	633	614	617	
06	588	575	571	590	563	526	519	491			618	613	629	621	619	
07	585	574	571	598	559	523	519	492			623	622	626	624	624	
08	596	573	573	595	551	531	519	489			620	620	623	618	622	
09	595	574	570	600	560	531	519	494			618	617	631	633	633	
10	587	574	576	603	552	528	512	494			621	623	638	624	633	
11	597	566	573	588	541	530	514	493			618	615	640	639	624	
12	586	565	RF	602	538	526	517	490			625	616	620	630	633	
13	588	560		603	548	526	511	489			618	617	635	631	RF	
14	591	563		611	549	529	522	491			615	618	622	621		
15	583	566	583	603	537	528	506	493			614	626	629	625		
16	591	567	577	601	535	534	504	507			618	621	629	635	631	
17	591	562	571	598	528	523	499	501			618	631	631	622	631	
18	588	556	577	590	540	528	510	495			615	630	628	626	624	
19	591	564	588	600	529	521	497	500			618	624	636	626	631	
20	584	561	588	592	535	528	496	499			614	626	625	619	625	
21	585	566	578	592	523	521	494	504			617	623	629	622	623	
22	574	557	581	586	525	523	494	498			620	624	623	633	621	
23	582	558	594	571	521	515	497	503			610	618	630	629	634	
24	580	551	589	579	524	521	497	506			616	624	622	628	622	
Total	14090	13609	12066	14262	13096	12597	12243	11869			14826	14900	15070	15014	13125	
Daily Mean	587.1	567.0	(21)	594.3	545.7	524.9	510.1	494.5			617.8	620.8	627.9	625.6	(21)	

RF = Recording failure.

N.B. Normalising factor 1 to 10 = 1.0052.

Wilkes Station closed and equipment transferred to the nearby replacement Station Casey.

COSMIC RAY RECORDS

Station Casey
Year 1969
Month April

Triplic Neutron Monitor
Scale Factor 64

TABLE 5
TABULATED Hourly Count Totals (Uncorrected)

Date	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	
Hour GMT																															
01																															
02																															
03																															
04																															
05																															
06																															
07																															
08																															
09																															
10																															
11																															
12																															
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18																															
19																															
20																															
21																															
22																															
23																															
24																															
Total	12764	13727	14519	14369	12925	13867	14362	14510	13346	11782	14992	16758	15894	14559	14062	14424	14280	13986													
Daily Mean	(22)	572.0	605.0	598.7	(23)	577.8	598.4	604.6	556.1	(21)	624.7	698.3	662.3	606.6	585.9	601.0	595.0	582.8													

* = Estimated from two sections. N.B. Normalising factor 1 to 30 = 0.9908. RF = Recording failure

On closure of the Wilkes Station the equipment was transferred to Casey, the nearby new Australian Station.

TABLE 7

TABULATED Hourly Count Totals (Uncorrected)

Station Casey
Year 1969
Month June

COSMIC RAY RECORDS

Date Hour GMT	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30
01	529	532	538	501	487	505	509	553	550	534	506	500	472*	483*	558*	473*	488*	488*	513*	589*	547*	533*	512*	535*	556*	603*	623*	620*	574*	629*
02	533	548	539	508	492	508	517	558	555	537	517	504	470*	486*	550*	476*	495*	491*	504*	590*	546*	540*	523*	523*	565*	609*	629*	621*	569*	629*
03	530	545	547	500	478	512	510	548	559	528	517	504	475*	500*	555*	476*	486*	495*	515*	596*	541*	540*	513*	535*	559*	611*	626*	620*	574*	638*
04	528	542	538	500	486*	504	508	560	553	524	516	498	469*	510*	544*	464*	497*	500*	512*	608*	540*	537*	528*	534*	562*	599*	624*	612*	565*	634*
05	530	543	540	497	483	506	516	554	559	531	514	505	466*	515*	535*	480*	498*	494*	516*	605*	529*	535*	535*	534*	564*	615*	638*	609*	561*	634*
06	526	546	537	500	490	509	517	549	559	532	515	499	475*	515*	529*	473*	503*	494*	523*	593*	534*	541*	523*	534*	567*	618*	635*	609*	567	642*
07	527	547	536	495	493	503	522	554	551	524	515	501	472*	506*	524*	480*	491*	497*	524*	587*	532*	537*	535*	535*	572*	611*	645*	604*	577*	649*
08	524	555	538	496	491	510	514	555	552	522	516	501	472*	515*	523*	486*	495*	495*	525*	583*	535*	538*	526*	534*	569*	617*	639*	609*	565*	653*
09	535	554	532	495	497	503	515	561	553	521	518	502	470*	526*	512*	480*	494*	513*	532*	592*	528*	540*	528*	540*	574*	621*	636*	621*	561*	653*
10	535	550	542	496	495	504	519	561	552	518	508	504	469*	538*	498*	488*	494*	504*	541*	595*	528*	540*	521*	534*	569*	618*	645*	603*	569*	648*
11	528	550	538	491	504	504	522	552	548	526	514	508	466*	534*	494*	485*	498*	501*	558*	599*	529*	537*	519*	535*	575*	630*	644*	617*	574*	649*
12	532	552	535	499	506	503	527	557	547	525	517	502	467*	532*	491*	483*	500*	507*	552*	589*	529*	540*	528*	537*	572*	630*	642*	605*	565*	671*
13	539	545	535	493	510	504	515	560	551	524	511	502	463*	537*	498*	491*	503*	512*	558*	589*	525*	535*	535*	535*	576*	613*	645*	601*	565*	667*
14	530	550	532	497	505	517	531	556	545	518	511	505	461*	525*	491*	486*	501*	497*	568*	598*	528*	538*	532*	540*	577*	623*	641*	598*	579*	666*
15	522	544	533	492	512	500	532	544	552	529	508	496	461*	537*	494*	489*	497*	507*	569*	599*	535*	529*	526*	540*	584*	626*	647*	610*	577*	669*
16	527	540	531	490	506	509	525	547	542	524	511	490	463*	540*	480*	494*	500*	504*	575*	595*	531*	529*	534*	544*	587*	624*	648*	607*	579*	676*
17	529	542	526	490	515	513	522	548	551	518	502	500	467*	541*	479*	486*	504*	506*	575*	586*	529*	537*	529*	546*	592*	624*	638*	620*	581*	680*
18	528	542	522	482	506	527	526	550	545	526	507	492	464*	544*	480*	491*	489*	504*	592*	575*	528*	522*	544*	544*	592*	627*	636*	609*	587*	676*
19	533	544	517	486	502	522	530	554	544	525	512	486	463*	541*	480*	491*	491*	500*	583*	562*	531*	540*	534*	558*	586*	620*	639*	615*	589*	672*
20	531	545	516	486	511	524	541	548	539	519	501	489	470*	540*	470*	491*	498*	507*	586*	564*	541*	537*	531*	562*	601*	627*	638*	599*	602*	682*
21	534	546	522	486	511	528	539	549	536	518	497	480	475*	544*	476*	491*	498*	498*	581*	564*	532*	529*	535*	556*	598*	623*	633*	612*	598*	677*
22	534	542	514	478	508	520	548	552	534	516	508	485	473*	547*	475*	494*	504*	595*	555*	555*	532*	531*	532*	547*	601*	620*	636*	604*	608*	677*
23	543	543	512	479	513	520	544	556	536	526	497	478	478*	552*	467*	489*	489*	515*	583*	559*	534*	526*	526*	556*	596*	615*	629*	587*	612*	651*
24	541	529	509	481	512	516	560	553	528	514	500	483	482*	544*	466*	488*	488*	501*	592*	553*	540	515*	523*	556*	RF	621*	617*	577*	612*	639*
Total	12748	13076	12729	11818	12013	12271	12609	13279	13141	12579	12238	11914	11263	12652	12069	11625	11891	12034	13282	14025	12801	12828	12653	12994	14849	15273	14589	13910	15761	
Daily Mean	531.2	544.8	530.4	492.4	500.5	511.3	525.4	553.3	547.5	524.1	509.9	496.4	469.3	527.2	502.9	484.4	495.5	501.4	553.4	584.4	533.4	534.5	527.2	541.4	(23)	618.7	636.4	607.9	579.6	656.7

* = Estimated from two sections. N.B. Normalising factor 1 to 30 = 0.9908. RF = Recording failure.

COSMIC RAY RECORDS

Station Wilkes
Year 1969
Month February

Triplex Neutron Monitor
Scale Factor 64
Exponential correction, attenuation length 138 gm/cm²

TABLATED Hourly Count Totals
Corrected to Standard
Pressure 980 Millibar

TABLE 15

Date Hour GMT	Date																												
	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	
01	597	613	604	607	603	612	602	625†	615†	622	613	609	618	621	612	615	622	629	622†	634†	625†	634	632	626	624	631	620	610	
02	617	598	597	605	606	612	608	627†	619†	612	622	623	618†	621	613	620	624	630	634†	623†	621†	625	630	626	625	633	618	605	
03	601	614	600	607	612	610	614	627†	615†	624	614	611	612†	614	612	610	617	624	625†	626†	626†	621	628	617	632	622	611	RF	
04	602	608	610	610	600	606	614	629†	615†	635	609	616	620†	622	619	614	625	624	630†	620†	627†	634	629	621	628	631	606	610	
05	RF	610	601	611	622	616	605	625†	625†	629	616	616	619	615	618	616	624	633	631†	637†	629†	632	631	635	627	628	604	RF	
06	601	599	616	612	612	612	625	625†	623†	627	615	616	618	618	622	621	627	624	629†	633†	629†	627	619	626	623	628	606	607	
07	606	602	606	613	607	609	617	629†	619†	633	606	634	613	616	618	619	629	624	634†	633†	633†	629	628	626	623	627	604	611	
08	606	612	606	605	614	604	616	628†	624†	627	606	619	619	611	617*	618	626	626	631*	634†	634†	634	623	624	633	628	602	592	
09	608	603	603	619	612	620	618	624†	616	625	607	624	617	619	621*	623	623	626	629†	627†	621†	630	628	638	624	624	602	595	
10	608	603	605	613	608	620	620	626†	615	624	611	625	618	612	623	617	626	632	626†	635†	639†	628	620	631	634	624	616	596	
11	611	604	605	605	611	616	622	626†	626	626	616	619	623	623	620	625	615	627	629†	622†	632†	623	629	627	632	607	604	590	
12	612	611	607	609	607	612	622	617†	622†	628	617	621	618	618	610	624	620	624	634†	621†	633†	627	625	625	633	615	613	600	
13	613	608	602	619	605	619	620	626†	618	624	613	625	616	618	620	620	625	624	628†	625†	620†	629	625	RF	635	622	608	588	
14	606	603	607	616	605	611	624	624	624	621	631	610	623	620	620	615	626	616	632	626†	632†	622†	626	619	624	631	614	598	587
15	609	602	612	608	600	617	619	627	620	627	615	619	626	621	621	631	630	630	630†	623†	624†	627	619	631	626	620	597	577	
16	610	609	617	604	605	613	611†	627	630	623	612	623	613	612	621	623	624	629	624†	626†	630†	620	624	628	630	611	609	595	
17	609	605	601	599	612	620	613†	619	624	632	613	615	614	609	617	621	632	631	634†	626†	620†	620	613	627	626	614	603	589	
18	614	605	602	605	605	619	617†	623	620	634	612	616	608	615	621	624	625	632	626†	629†	629†	624	629	624	631	612	602	599	
19	610	603	609	601	603	615	622†	616	629	636	623	612	615	617	622	623	624	627	629†	633†	625†	622	620	633	628	608	602	586	
20	616	595	598	596	603	621	621†	621	628	623	611	613	618	616	624	621	627	624	624†	623†	622†	620	627	624	624	623	608	591	
21	616	598	615	600	611	620	612†	624	619	612	615	614	623	620	619	617	624	634	631†	625†	636†	624	627	630	637	617	592	599	
22	598	597	605	612	611	619	618†	626	615	624	610	621†	613	616	617	620	630	626	618†	622†	631†	613	615	621	623	622	595	593	
23	607	599	609	605	611	620	613†	615	619	612	611	613†	613	615	610	621	634	625	627†	622†	618†	617	621	623	641	619	592	595	
24	599	604	608	603	611	619	620†	624	621	613	608	621†	607	620	615	629	627	618	628†	629†	625†	622	622	621	632	620	594	598	
Total	13375	14507	14528	14588	14596	14762	14793	14980	14898	15003	14705	14848	14799	14809	14827	14898	14996	15055	15079	15059	15050	15008	14983	14408	15102	14900	14506	13113	
Daily Mean	(22)	604.5	605.3	607.8	608.2	615.1	616.4	624.2	620.8	625.1	612.7	618.7	616.7	617.0	617.8	620.8	624.8	627.3	628.3	627.5	627.1	625.3	624.3	(23)	629.3	620.8	604.4	(22)	

RF = Recording failure. * = Estimated from two sections. † = Hourly wind speed exceeded 45 mph. § = Pressure gradient exceeds 2 mb/hr.
N.B. Normalising factor 1 to 23 = 1.0042, 24 to 28 = 1.0022.

COSMIC RAY RECORDS

Station Wilkes
Year 1969
Month April

Triplex Neutron Monitor
Scale Factor 64
Exponential correction, attenuation length 138 gm/cm²

TABLATED Hourly Count Totals
Corrected to Standard
Pressure 980 Millibar

TABLE 17

Date	Hour GMT	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15
01	618	612	621	620	628	623	625	612	RF	RF	618	616	619	633	619	
02	618	620	621	627	622	629	626	622			620	618	626	621	619	
03	622	613	614	627	624	627	619	624			616	617	619	617	625	
04	621	621	619	626	617	625	623	628			614	622	627	623	615	
05	618	625	628	622	626	622	624	624			622	619	633	614	617	
06	618	621	627	619	629	629	627	628			618	613	629	621	619	
07	613	618	625	627	628	626	628	630			623	622	626	624	624	
08	625	619	626	623	623	635	629	625			620	620	623	618	622	
09	622	622	621	627	637	634	631	631			618	617	631	633	633	
10	614	623	627	630	632	630	624	630			621	623	638	624	633	
11	624	616	622	615	623	632	628	627			618	615	640	639	624	
12	613	616	RF	629	622	627	633	620			625	616	620	630	633	
13	613	613		629	637	626	627	617			618	617	635	631	RF	
14	616	617		637	640	630	642	619			615	618	622	621		
15	608	621	627	629	629	629	624	620			614	626	629	625		
16	623	623	619	628	629	636	622	638			618	621	629	635	631	
17	624	618	611	626	623	622	619	629			618	631	631	622	631	
18	623	612	616	619	638	629	636	621			615	630	628	626	624	
19	627	621	627	630	627	620	622	626			618	624	636	626	631	
20	620	618	626	624	636	630	624	625			614	626	625	619	625	
21	622	625	614	627	624	622	624	630			617	623	629	622	623	
22	610	616	617	624	628	625	626	620			620	624	623	633	621	
23	619	617	630	612	624	616	631	623			610	618	630	629	634	
24	619	610	623	624	629	624	632	626			616	624	622	628	622	
Total	14850	14837	13061	15001	15075	15048	15046	14995			14826	14900	15070	15014	13125	
Daily Mean	618.8	618.2	(21)	625.0	628.1	627.0	626.9	624.8			617.8	620.8	627.9	625.6	(21)	

RF = Recording failure.

N.B. Normalising factor 1 to 10 = 1.0052.

Wilkes Station closed and equipment transferred to the nearby replacement Station Casey.

COSMIC RAY RECORDS

Station Casey
Year 1969
Month April

Triplex Neutron Monitor
Scale Factor 64
Exponential correction, attenuation length 138 gm/cm²

TABULATED Hourly Count Totals
Corrected to Standard
Pressure 980 Millibar

TABLE 18

Date	Hour GMT	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30		
	01	RF 602*	606*	610*	610*	612*	615*	619*	612*	632*	610*	614*	607*	602*	615*	612*	586*	609*															
	02	601*	611*	615*	613*	615*	609*	630*	624*	626*	612*	620*	618*	616*	621*	595*	588*	600*															
	03	611‡	610*	622*	607*	610*	621*	618*	627*	629*	RF	610*	625*	613*	604*	618*	605*	584*	604*														
	04	611‡	608*	611*	620*	RF	614*	622*	616*	625*		608*	608*	614*	607*	626*	611*	584*	606*														
	05	613‡	604*	607*	631*	616*	612*	617*	626*	626*	605*	629*	611*	605*	621*	604*	589*	607*															
	06	608‡	610*	612*	615*	614*	626*	621*	623*	632*	619*	608*	610*	609*	613*	615*	608*	588*	605*														
	07	613‡	598*	606*	614*	609*	615*	625*	631*	629*	618*	605*	615*	614*	613*	611*	602*	583*	615*														
	08	608‡	603*	609*	617*	615*	611*	621*	628*	626*	620*	614*	622*	615*	611*	623*	601*	591*	614*														
	09	612‡	612*	609*	615*	604*	626*	611*	614*	628*	620*	609*	612*	610*	614*	625*	598*	600*	614*														
	10	603‡	618*	605*	609*	607*	623*	624*	626*	631*	622*	617*	605*	612*	609*	615*	599*	606*	617*														
	11	601	614*	607*	618*	615*	617*	617*	621*	621*	624*	607*	614*	610*	612*	614*	599*	609*	613*														
	12	598	612*	609*	610*	614*	624*	619*	629*	629*	617*	610*	610*	610*	620*	615*	606*	615*	604*														
	13	601	602*	610*	615*	607*	609*	614*	617*	610*	625*	614*	624*	607*	611*	616*	605*	609*	610*														
	14	596	599*	612*	615*	628*	624*	618*	623*	630*	610*	610*	617*	608*	610*	621*	600*	616*	608*														
	15	607	612*	607*	619*	607*	621*	624*	613*	624*	614*	617*	611*	621*	615*	615*	592*	608*	609*														
	16	595	611*	615*	620*	616*	616*	616*	620*	620*	607*	619*	627*	620*	618*	612*	604*	603*	616*														
	17	598	602*	614*	615*	607*	620*	626*	622*	622*	602*	612*	615*	614*	620*	616*	590*	608*	614*														
	18	602	605*	612*	611*	616*	617*	615*	610*	613*	616*	613*	616*	614*	611*	612*	592*	601*	616*														
	19	606	612*	615*	612*	603*	626*	617*	619*	615*	606*	612*	610*	615*	621*	613*	600*	603*	608*														
	20	608	612*	615*	612*	613*	615*	628*	612*	631*	603*	614*	620*	610*	614*	610*	589*	607*	597*														
	21	599	609*	609*	609*	603*	615*	625*	616*	628*	611*	613*	610*	613*	615*	613*	584*	602*	601*														
	22	613	609*	618*	617*	610*	621*	628*	620*	621*	608*	622*	611*	611*	624*	612*	590*	598*	617*														
	23	599	610*	620*	621*	621*	612*	620*	622*	618*	619*	612*	601*	607*	607*	605*	574*	593*	610*														
	24	608	604*	614*	613*	616*	629*	625*	619*	618*	614*	610*	614*	629*	619*	609*	582*	597*	617*														
Total		13310	14579	14676	14760	14074	14841	14875	14903	14962	12953	14693	14760	14692	14711	14773	14342	14368	14631														
Daily Mean		(22)	607.5	611.5	615.0	(23)	618.4	619.8	621.0	623.4	(21)	612.2	615.0	612.2	613.0	615.5	597.6	598.7	609.6														

RF = Recording failure. * = Estimated from two sections.
N.B. Normalising factor 1 to 30 = 0.9908.

‡ = Hourly wind speed exceeded 45 mph.

§ = Pressure gradient exceeds 2 mb/hr.

COSMIC RAY RECORDS

Station Casey
Year 1969
Month December

Triplex Neutron Monitor
Scale Factor 64
Exponential correction, attenuation length 138 gm/cm²

TABLATED Hourly Count Totals
Corrected to Standard
Pressure 980 Millibar

Table with columns for Date (Hour GMT) and counts (01 to 31). Includes a 'Total' row and a 'Daily Mean' row.

14884 14981 14769 14687 14586 13904 13946 14707 14828 14872 14930 14974 14939 15024 15008 15031 15152 15178 15035 14296 15009 15011 14916 14964 14995 7504 10657 15127 15250 15105

Daily Mean 620.2 624.2 615.4 612.0 607.8 (23) (23) 612.8 613.5 617.8 619.7 622.1 623.9 622.5 626.0 625.3 626.3 631.3 632.4 626.5 (23) 625.4 625.5 621.5 623.5 624.8 (12) (17) 630.3 635.4 629.4

RF = Recording failure. * = Estimated from two sections. N.B. Normalising factor 1 to 31 = 0.9896.

STATION LEVEL BAROMETRIC PRESSURE

TABLE 30

TABLATED Mean Hourly Pressure
(Units 0.1 Millibar) - 9400

Month April

Year 1969

Station Wilkes

Date Hour GMT	Year 1969																																																																																																																																	
	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15																																																																																																				
01	477	491	540	474	509	648	644	724	RF	RF	533	553	489	486	469	536	549	488	483	468	539	546	489	483	467	541	543	485	487	466	543	539	484	491	462	544	534	481	493	459	546	532	478	494	459	548	528	473	492	459	550	524	471	491	455	554	516	471	492	453	556	508	472	494	453	561	501	476	496	456	562	496	481	496	455	562	494	481	495	452	563	494	482	495	446	562	494	486	494	440	561	494	486	488	437	559	495	484	486	438	558	493	483	480	443	557	491	482	474	445	557	492	483	473	445	557	493	483	472	454	557	492	484	472	463	556	490	485	472	470
Total	11310	12410	12169	11246	14179	15372	16298	17191	13262	12293	11557	11679	10914																																																																																																																					
Daily Mean	471.2	517.1	507.0	468.6	590.8	640.5	679.1	716.3	552.6	512.2	481.5	486.6	454.7																																																																																																																					

RF = Recording failure.

Wilkes Station closed and equipment transferred to the nearby replacement
Station Casey.

TABLE 31

STATION LEVEL BAROMETRIC PRESSURE

Station Casey Year 1969 Month April TABULATED Mean Hourly Pressure (Units 0.1 Millibar) - 9400

Date	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	
Hour GMT	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	
	646	645	643	643	639	635	630	625	615	608	596	584	563	558	540	515	494	473	445	420	399	374	371	353	1301.4	542.3					
	318†	311†	322†	330†	354†	367†	381†	406†	424§	445§	456	471	487	497	504	510	515	518	515	494	473	445	420	399	1072.1	446.7					
	466	457	456	449	443	438	431	427	421	418	415	412	410	404	401	398	395	393	387	385	385	388	389	388	9959	481.5					
	500†	498	491†	486†	461†	449†	444†	449†	458†	467†	478†	486	492	496	493	487	485	484	477	468	455	448	443	436	10482	436.8					
	466	457	456	449	443	438	431	427	421	418	415	412	410	404	401	398	395	393	387	385	385	388	389	388	9959	436.8					
	394	397	400	405	408	412	412	412	412	428	434	441	446	447	448	452	452	451	447	443	440	448	451	452	11802	415.0					
	508	508	509	505	502	498	493	491	489	489	489	487	487	487	487	487	486	486	483	482	477	476	476	476	10482	436.8					
	482	481	481	481	480	478	475	473	471	471	471	471	463	459	454	454	454	447	443	443	442	442	442	442	10755	491.8					
	388	393	397	401	404	409	416	416	418	422	427	431	435	436	440	448	455	462	468	473	484	495	503	510	518	5488	373.2				
	581	582	582	582	578	572	568	568	565	559	556	553	543	536	529	521	517	515	515	515	515	515	515	515	515	8956	532.8				
	434	427	415	410	404	398	398	398	398	397	397	397	397	397	397	397	397	397	397	397	397	397	397	397	7067	294.5					
	300	293	290	283	271	266	266	266	266	266	266	266	266	266	266	266	266	266	266	266	266	266	266	266	6067	414.0					
	372	376	379	382	384	388	394	394	394	394	394	394	394	394	394	394	394	394	394	394	394	394	394	394	11205	466.9					
	459	463	465	468	472	475	477	477	477	477	477	477	477	477	477	477	477	477	477	477	477	477	477	477	9413	392.2					
	382	384	389	389	389	389	389	389	389	389	389	389	389	389	389	389	389	389	389	389	389	389	389	389	430	408.3					
	462	467	468	467	465	465	466	466	466	466	466	466	466	466	466	466	466	466	466	466	466	466	466	466	430	461.1					

On closure of the Wilkes Station the equipment was transferred to Casey, the nearby new Australian Station.

† = Hourly wind speed exceeded 45 mph. § = Pressure gradient exceeds 2 mb/hr.

STATION LEVEL BAROMETRIC PRESSURE

Station Casey

Year 1969

Month June

TABLATED Mean Hourly Pressure
(Units 0.1 Millibar) - 9400

Date Hour GMT	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30
01	580	572	575	650	733	652	644	561	504	535	587	623	697	680\$	479\$	720	654	648	603	393	481	519	568	549	487	372	325	341	451	350\$
02	580	565	573	653	728	654	645	529\$	505	537	589	623	705	658\$	476\$	719	650	647	600	390	488	518	570	547	483	368	323	347	455	338\$
03	584	562	570	662	726	656	646	552	504	538	590	624	709	644\$	484\$	719	649	646	594	368\$	501	519	570	548	482	363	322	354	462	331\$
04	588	561	572	670	725	656	656	550	501	539	590	624	713	635\$	507\$	718	649	642	582	357\$	511	519	569	546	480	362	319	362	473	325\$
05	591	561	574	674	720	656	648	559	499	539	591	626	716	615\$	534\$	714	650	639	569	354\$	518	517	570	547	476	358	313	365	476	320\$
06	592	554	579	678	716	655	644	554	495	541	591	627	722	617\$	548\$	712	651	634	557	368	527	515	570	547	470	353	310	371	481	318\$
07	594	550	580	682	709	660	644	550	497	545	591	624	723	628\$	564\$	709	648	630	546	389	530	515	569	547	461	348	306	378	484	308\$
08	594	549	583	685	705	661	643	546	500	552	594	624	725	622\$	588\$	706	644	629	535	400	531	515	568	547	458	344	304	383	482	300\$
09	594	549	585	688	697	662	639	545	500	554	596	624	727	593\$	609\$	703	645	628	522	384	533	515	567	542	456	339	301	385	486	299\$
10	596	550	587	692	694	668	634	541	505	557	597	623	731	570\$	632\$	698	644	630	514	367	533	517	567	539	455	335	297	387	488	297\$
11	595	550	588	698	688	668	637	537	506	561	599	623	733	560\$	641\$	694	642	630	506	381	533	519	565	538	454	335	294	386	482	286\$
12	593	550	588	703	682	671	637	539	506	563	600	624	736	563\$	653\$	691	643	626	493\$	383	535	521	561	536	447	338	294	388	480	263\$
13	593	550	589	709	672	671	632	539	507	566	600	625	738	555\$	662	687	642	628	473\$	388	537	523	559	530	439	339	294	390	477	258\$
14	595	552	593	714	664	670	620	539	506	569	602	628	738	545\$	667	682	641	640	457\$	380	537	529	555	525	434	339	294	389	470	251\$
15	597	559	597	716	663	670\$	615	538	507	570	605	629	745	528\$	677	677	638	640	434\$	380\$	538	532	554	520	425	339	294	386	460	249\$
16	597	561	601	719	668	660\$	609	533	507	573	610	635	744	523\$	684	675	638	640	429	401\$	537	538	551	516	419	338	294	385	449	245\$
17	600	559	604	722	665	647\$	601	527	508	573	613	641	739	528\$	693	673	638	637	415	433\$	535	542	549	511	411	339	295	373	440	238\$
18	599	562	608	723	667	612\$	594	523	509	575	613	651	733	524\$	698	671	638	633	405	463\$	533	547	548	506	404	339	299	372	432	234\$
19	594	562	620	727	669	639	588	516	509	577	614	661	729	504\$	703	663	640	632	398	474\$	533	550	548	501	395	338	306	378	427	233\$
20	589	563	621	730	663	618\$	580	512	515	579	615	663	724	495\$	709	662	641	624	396	478	528	551	548	500	391	335	312	387	420\$	242\$
21	586	566	622	732	658	603\$	572	511	523	581	617	671	722	493\$	713	660	642	615	395	473	525	554	550	495	388	334	315	401	401\$	241\$
22	585	568	630	732	655	622\$	564	511	525	583	619	678	708	494\$	719	656	644	617	390	474	523	560	552	492	386	329	321	411	381\$	238\$
23	582	569	636	734	655	623\$	572	510	526	585	621	685	701	493\$	721	656	645	612	393	478	521	560	552	490	382	328	326	425	366\$	279\$
24	577	575	643	735	653	638\$	563	508	528	588	622	691	691\$	484\$	721	656	647	608	394	472	521	563	551	488	377	327	335	437	358\$	291\$
Total	14175	13419	14318	16828	16475	15592	14827	12830	12192	13480	14466	15347	17349	13548	15081	16521	15463	15155	11660	9830	12589	12758	13431	12607	10460	8239	7393	9181	10781	6734

Daily Mean 590.6 559.1 596.6 701.2 686.5 649.7 617.8 534.6 508.0 561.7 602.8 639.5 722.9 564.5 628.4 688.4 644.3 631.5 483.3 409.6 524.5 531.6 559.6 525.3 435.8 343.3 308.0 382.5 449.2 280.6

‡ = Hourly wind speed exceeded 45 mph. § = Pressure gradient exceeds 2 mb/hr.

STATION LEVEL BAROMETRIC PRESSURE

TABLE 36

TABULATED Mean Hourly Pressure (Units 0.1 Millibar) - 9400

Month September

Year 1969

Station Casey

Table with columns: Date Hour GMT, 01-30, and Total. Rows contain hourly pressure readings in millibars. Includes a 'Daily Mean' row at the bottom of the data section.

† ... Hourly wind speed exceeded 45 mph.

‡ = Pressure gradient exceeds 2 mb/hr.



T. J. HUGHES, Government Printer, Tasmania.
