June 1961

Reprinted from *The Observatory*, Vol. **81**, No. 922, pp. 95–98

INCLINED LINES OF SUNSPOT ACTIVITY

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In a recent article[1] on the structure of the sunspot zone as a function of heliographic latitude, evidence is presented that several zones of sunspot activity develop in each solar hemisphere. Dr. Bell's charts sum up sunspot distribution for periods of at least a year and consequently integrate results for many regions of the Sun. Her method, though admirable for illustration of the Spoerer progression and for the detection of fixed favoured latitudes of sunspot formation, obscures the possibility that the zones of activity may be other than parallel to lines of latitude, *i.e.*, her procedure tends to wash out possible evidence of lines of solar activity inclined to the solar equator. The photograph of the Sun utilizing only Lyman-alpha radiation, taken from a rocket by Herbert Friedmann and his colleagues of the Naval Research Laboratory, emphasizes the pattern of such inclined lines of solar activity. Though less pronounced, this pattern is often clear in *K*-line spectroheliograms, taken from below the Earth's atmosphere.

Plate VI shows the Sun at the time of the maximum sunspot activity in the present cycle, No. 19. A first impression, from this photograph from the Manila Observatory, is that sunspots form along extended slanted lines, when there are enough solar spots to provide continuity. Table I contains

TABLE I

Rotation No.	*Line*	*Slope*	*Lat. on zero meridian*	*Standard error*	*No. of items included*	*Percentage omitted*	*F-ratio in covariance test: Needed for 99 per cent significance*	*Obtained*
		°	°	°				
1395	1a	+ 9·46	−37·88	0·71	78	6·9	3·88	1228
	1b	+ 7·16	−38·92	3·29	8			
	1c	+ 7·75	−48·86	2·08	110			
	1d	+ 8·22	−61·92	1·06	73			
1395	1e	−13·95	+95·4	1·47	65	4·0	6·80	210
	1f	−16·40	+97·3	2·18	127			
1396	2a	−12·50	+84·53	1·30	9	3·5	3·50	268
	2b	−10·75	+68·50	1·75	94			
	2c	−11·06	+63·80	0·50	6			
	2d	− 9·50	+45·00	0·67	9			
1394	3a	+ 8·56	−44·50	4·50	72	11·2	6·76	189
	3b	+ 6·37	−44·56	2·20	152			
1409 and 1410	4a	− 8·37	+33·87	1·83	56	3·9	3·36	760
	4b	− 9·70	+25·00	1·38	106			
	4c	− 7·90	+17·25	1·55	40			
	4d	−11·25	+ 7·85	1·70	38			
	4e	−12·80	0·00	1·10	31			
1413	5a	− 6·85	+60·37	1·13	50	0·0	6·81	5040
	5b	− 7·20	+45·05	1·05	96			