the galactic corona into the cool clouds of the disk, between $R = 1.5$ and 2.5 kpc. The magnetic lines of force would then have to enter the plane at right angles and bend there to extend outward in the plane of the disk.

REFERENCES

- Kwee, K. K., Muller, C. A. and Westerhout, G. 1954, *B. A. N.* **12**, 211.
 Oort, J. H. and Rougoor, G. W. 1958, *Kon. Ned. Ac. Wet. Afd. Nat.* **67**, 139.
 van Woerden, H., Rougoor, G. W. and Oort, J. H. 1957, *C. R. Acad. Sci. Paris* **244**, 1691.

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PURCELL, J. D., TOUSEY, R., PACKER, D. M. AND HUNTER, W. R. **Solar disk photographs made with Lyman- α of hydrogen.**

A monochromatic camera for photographing the sun with the Lyman- α line of hydrogen was flown to an altitude of 200 km on March 13, 1959. The instrument utilized two diffraction gratings of 40-cm radius and 600 line/mm, one being mechanically deformed so as to produce a stigmatic image. Detailed images were obtained with exposure times between 1 and 0.02 sec. The resolution was of the order of one-half minute of arc. The photographs were compared with $H\alpha$ and CaK line images taken simultaneously by cooperating observatories. The Lyman- α image shows intense plage areas and a general uneven mottling. The resemblance is closest to the K line image, but the contrast appears greater. Several small prominences are visible.

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SEN, HARI K. AND DUBS, CHARLES W. **A geophysical determination of the thermal electron attachment coefficient of oxygen molecules.**

The coefficient of attachment, β , of thermal electrons to oxygen molecules in the upper part of the troposphere has been calculated using the data from a nuclear burst at an altitude between 10,000 and 50,000 ft. Total initial gamma radiation doses were measured at a number of points (i) in the vicinity of the burst and the attenuation of a telemetering signal from each of these points to a ground point was measured (Haskel *et al.*). The doses and a fraction of dose rate at a certain short time after burst lead to an inverse-square and exponential-attenuation formula for the electron production rate. The electron density at this time is essentially the production

rate divided by the product of β and the oxygen number density; assuming a value of β , it is calculated at points along the telemetering ray path. The electron density, the electron collision frequency, and the ray frequency of nearly 225 Mc give the index of attenuation at the points. The index is numerically integrated over the ray path to give the attenuation. The value of β is chosen to make the calculated attenuations (inversely proportional to β) agree as nearly as possible with the measured attenuations.

Preliminary corrections taking into account the pressure dependence of β (2 per cent change in δ), photodetachment (5 to 15 per cent increase in δ), and absorption due to negative ions (increase in δ by a factor of 1.2 to 10) lead to the calculated values of δ in the following table:

i	Calc. δ	Exp. δ	i	Calc. δ	Exp. δ
4	2.25	5.3	10	.552	.579
5	1.83	1.85	11	.424	.367
6	1.35	1.74	13	.181	.126
7	1.23	1.51	14	.114	.0414
8	.964	1.19	15	.0752	.0438
9	.713	.821			

and to a value of K , the ratio of β divided by the oxygen number density, of $K = 7.2 \times 10^{-30} \text{ cm}^6 \text{ sec}^{-1}$. This value of K is about three times that recently measured at room temperature by Chanin and Biondi (1958). It is interesting to note that the observed decrease in the echo rate of long-enduring echoes from Perseid and Arietid meteors, height approximately 80 km, leads to a value of K agreeing with ours within a factor of 2 (Kaiser 1953).

REFERENCES

- Chanin and Biondi, 1958, Air Force Cambridge Research Conference, Nov. 20-21.
 Haskel *et al.*, AFSWP, WT-1101, Appendix C (Confidential report).
 Kaiser, T. R. 1953, *Advances in Physics* **II**, 536.

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STECHER, THEODORE P., JOHNSON, ROBERT I. AND YOSS, KENNETH M. **Spectrophotometry of RS Ophiuchi, 1958.**

The recurrent nova RS Ophiuchi had its third recorded outburst on July 14, 1958. It was observed with the Michigan instruments from July 17 through September 22. Twenty-eight spectra were obtained with the 37-inch reflector at five different dispersions, covering from $\lambda 3100$ to $\lambda 8800$. The identified emissions include: H , HeI , $HeII$, FeI , $FeII$, $[FeII]$, $[FeX]$, NI , $[NII]$, $NIII$,