can see very distant nebulæ in the earlier stages of their evolution, a slight decrease of total luminosity of a nebula with age will completely change the situation.

A more detailed account of this work will be given elsewhere.

G. GAMOW.
George Washington University. E. TELLER.
Dec. 15.

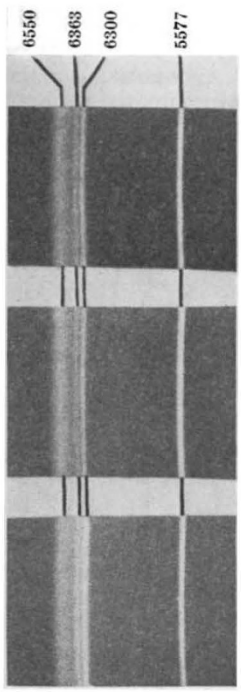
[1] Hubble, E., "The Realm of Nebulæ" (Yale Univ. Press, 1936).
[2] Jeans, J. H., "Astronomy and Cosmogony" (Cambridge Univ. Press, 1928).
[3] Tolman, R. C., "Relativity, Thermodynamics and Cosmology" (Oxford University Press, 1938).

Red Auroral Lines on September 14–16

IN a letter entitled "Very Small Intensity of the Red O1 Triplet during the Auroral Displays of September 14–16", Vegard[1] has from his observations concluded that the intensities of the red auroral line 6300 A. and of the red positive group of nitrogen were very weak at that occasion.

Our photographs on Agfa Isopan *ISS* plates of the auroral spectra on those nights give a quite different result.[2]

On September 14–15, spectrograms were taken in continuous succession with three different spectrographs from 20h 45m M.E.T. until 3h 55m, simultaneously with photographic height measurements, from a series of stations. On *each of the* 17 *spectra* taken, the red auroral lines and bands are fairly strong, and on some of them, the line 6300 A. is several times stronger than the green auroral line 5577 A.



SPECTRA OF THE RED AND GREEN LINES OF THE AURORA OF SEPTEMBER 14–16, TAKEN ON AGFA ISOPAN *ISS* PLATES.

In the accompanying reproduction, *a* and *b* show the green and red parts of spectra taken simultaneously with the spectrum the photometer curves of which are given in Vegard's letter; *a* was exposed from 23h 18m until 23h 35m towards pulsating bands near Vega, *b* from 23h 43m until 24h 00m towards a red-green band in the north.

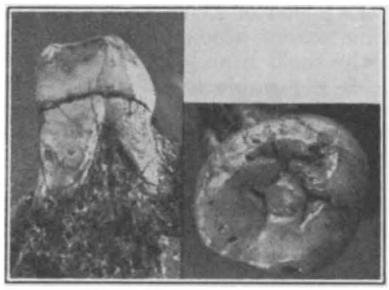
On September 15–16, nine spectra were taken, also simultaneously with height determinations. On each of them the red parts are very pronounced; *c* shows the red and green parts of a spectrum taken simultaneously with that taken by Vegard (see spectrum *b* in his letter) from 20h 47m until 21h 52m towards the summits of sunlit rays near the pole star.

CARL STÖRMER.
Institute of Theoretical Astrophysics,
Blindern, V. Aker.
Dec. 10.

[1] Vegard, NATURE, 142, 831 (1938).
[2] Störmer, NATURE, 142, 1034 (1938).

Further Remains of a Sterkfontein Ape

THE discovery at Sterkfontein by Dr. Robert Broom of new fossil anthropoid apes has created such widespread interest that it is desirable to report immediately on all new evidence that may come to hand.



MESIAL AND OCCLUSAL VIEWS OF THE NEW TOOTH DISCOVERED AT STERKFONTEIN.

Since March 1934 I have been working in the Sterkfontein district and have been fortunate enough to secure a number of new species of fossil mammals. Early in the present month (December) I discovered on the farm of Mr. Cooper, near the Sterkfontein Caves and about a quarter of a mile away from where Broom's first skull was discovered, a beautifully preserved tooth which differs in many respects from, but yet has certain characters of the same order as, those revealed by some of the upper molars of *Plesianthropus transvaalensis* and *Paranthropus robustus*.

The tooth is an upper left third molar. Its crown measures 13 mm. mesio-distally and 15 mm. bucco-lingually and its occlusal surface shows little indication of the wrinkling which is such a conspicuous feature of the corresponding molar in Broom's skulls. The crown is triangular in form with the base represented by the mesial side and the angles rounded off. This form is due primarily to marked reduction in the size of the metacone. Compared with the size of the crown, the masticating surface is small. Many of the detailed characters of the grooves and ridges bring to mind conditions shown in the upper molars of *Sinanthropus*. As yet the roots are not completely cleared from their matrix, but sufficient has been done to permit measurement of the height of the tooth from the summit of the paracone to the end of the mesio-buccal root. This measurement equals 21 mm.

It would be unwarranted at this stage to conclude that the tooth represents a different species from either *Plesianthropus transvaalensis* or *Paranthropus robustus*. If, however, it belongs to one of these apes, it is evident that there was very considerable variation in the form of the third molars. I consider the tooth now discovered to be more human-like than the corresponding teeth reported on by Broom, but feel that when assessing the significance of the characters presented both by this tooth and the anthropoid teeth previously discovered at Sterkfontein, it will be necessary to give very close attention to the subject of normal variation of teeth.

J. C. MIDDLETON SHAW.
University of the Witwatersrand,
Johannesburg.
Dec. 8.