TABLE 1. Strömgren photometry of Austin (1989 c1)

Date	u	v	b	y
Diaphragm 240 arcsec.				
Feb 13.0	10.95	10.11	8.83	8.61
15.0	10.54	10.01	8.73	8.55
16.0	10.21	9.84	8.55	8.44
17.0	10.52	10.01	8.63	8.50
18.0	10.43	9.98	8.56	8.40
21.0	10.41	9.88	8.40	8.24
22.0	10.27	9.79	8.33	8.17
23.0	10.16	9.75	8.26	8.09
24.0	10.22	9.69	8.20	8.04
25.0	10.11	9.62	8.18	8.03
Diaphragm 35 arcsec.				
Feb 12.0	12.36	11.56	11.03	10.75
13.0	12.64	11.69	11.05	10.76
15.0	12.32	11.72	10.87	10.59
16.0	12.05	11.37	10.79	10.53
17.0	12.30	11.34	10.73	10.46
18.0	12.12	11.29	10.65	10.39
21.0	11.91	11.16	10.57	10.31
22.0	12.21	11.22	10.51	10.27
23.0	11.86	11.03	10.33	10.08
24.0	11.97	11.09	10.35	10.11
25.0	11.95	10.98	10.28	10.05
Accuracy:	.15	.10	.06	.03

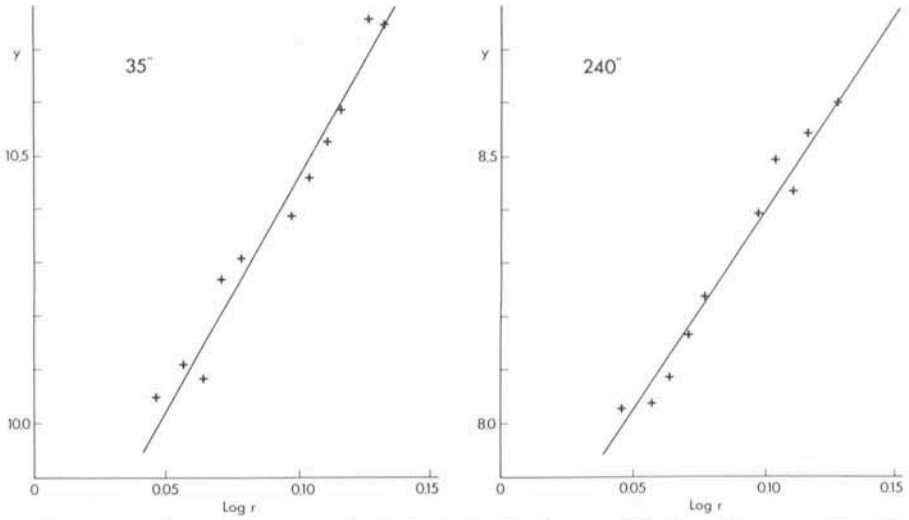

Figure 2: *Variation of the y magnitude in both diaphragms (Fig. 2a, 35 arcsec, Fig. 2b, 240 arcsec) as a function of log r. These graphs allow to derive the values of n according to law (2).*

Those conclusions are still uncertain. During that time lapse the distance comet-Sun (r) decreased from 1.36 to 1.12 A.U. while the distance comet-Earth (Δ) decreased from 1.83 to 1.69. Those relatively limited ranges do not permit a reliable extrapolation. Moreover we are neither in case (1) nor in case (2). An elaborate model of the coma would be needed to derive more appropriate laws. Unfortunately Austin will now cease to be measurable during several weeks, and we will have to wait until mid-April, when the comet moves into the morning sky, to see if it really becomes a Great Comet.

Comet Austin Develops an Ion Tail

The upper photo is a reproduction of a photographic plate, exposed 6 minutes with the ESO Schmidt telescope at La Silla in the evening of February 24, 1990 (Feb. 25.0 Universal Time). It was made on blue-sensitive emulsion during evening twilight, only 15° above the horizon. The telescope was set to follow the comet's motion; this is why the images of stars are trailed. The reproduction has been photographically amplified to bring out better the details in the faint tails.

There are two tails. The short, stubby one consists of dust particles reflecting the light from the Sun; it measures about 20 arcmin. The narrow ion tail mostly shines in the light of CN and CO_2 molecules; it is more than 2° long. It has the appearance of a double helix with at least two cross-over points and several wiggles. The shape is determined by the deflection of the electrically charged ions in the interplanetary magnetic field which is in turn influenced by the intensity of the solar wind.

The photo below was obtained one day later, on February 26.0 UT. The exposure time was now 12 minutes, but the ion tail is shorter. This indicates that the event which caused the long tail the day before, must have been transitory. Probably Comet Austin encountered a "magnetic border zone" in interplanetary space, where the magnetic field, carried by the solar wind, abruptly changed intensity and/or direction.

The plates were obtained on IIa-O emulsion behind a GG 385 filter, the observers were Hans-Emil Schuster and Guido Pizarro, and the photographic work was made by Herbert Zodet.