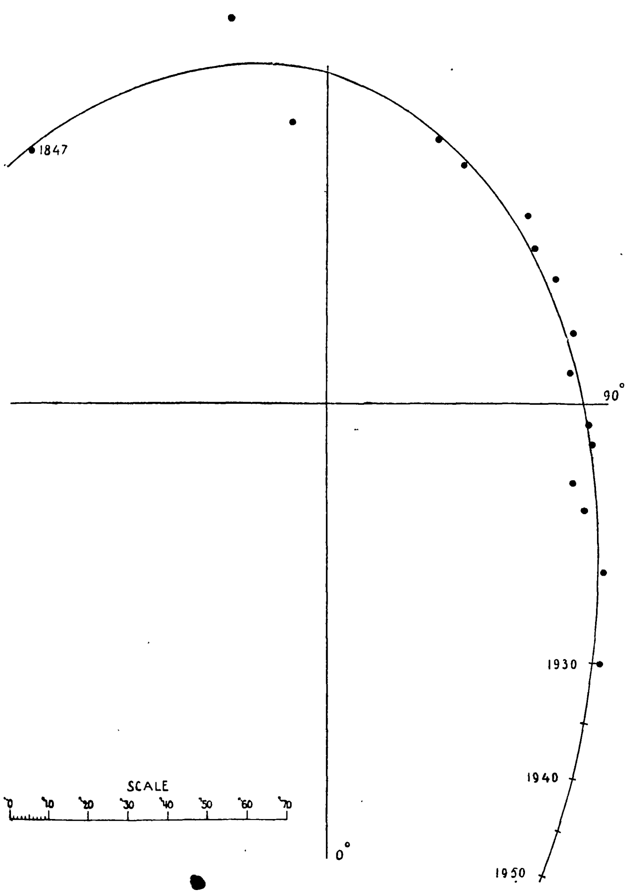
in the mass function for A, giving the minimum total mass and the maximum value for π. EDDINGTON's curve then gives

$$\pi = ''\cdot 0211;\ m_1 = 1\cdot 18\odot;\ m_2 = 0\cdot 317\odot;$$
$$m_3 = 0\cdot 771\odot;\ M_1 = 3\cdot 88;\ M_2 = 12;\ M_3 = 5\cdot 88,$$



Orbit of OΣ 82.

where for α_2 the spectral type *Ma* has been assumed. (M referred to $\pi = ''\cdot 1$).

The two limiting cases give practically the same mass for α_1 and for B. The parallaxes differ very little and are lower than the probable value for a physical member of the Hyades; they indicate therefore that the quantity a $P^{-\frac{2}{3}}$ of the visual orbit, or the magnitudes for A and B are subject to revision unless the stars should deviate from EDDINGTON's curve.

Ephemeris (equinox 1900).

	°	''
1930·0	45·5	0·93
1932·0	42·6	0·97
1934·0	40·0	1·01
1936·0	37·5	1·05
1938·0	35·2	1·09
1940·0	33·0	1·12
1942·0	31·1	1·16
1944·0	29.2	1·20
1946·0	27·4	1·24
1948·0	25·8	1·28
1950·0	24·2	1·31

The correction for precession is $(\theta_t - \theta_{1900})' = 0^\circ\cdot 0052\ (t - 1900)$.

Recently an orbit has been published by S. E. LAURITZEN in *A. N.* 5676 (1929). His elements are quite different ($P = 112\cdot 5$, etc.) from those derived here, but give large residuals for the observations in 1928—1930, viz: $+6^\circ\cdot 3$, $+''\cdot 259$; $+6^\circ\cdot 1$, $+''\cdot 28$ and $+10^\circ\cdot 5$, $+''\cdot 20$.

Correction. In *U. O. C.* 81 FINSEN remarks that the hypothetical parallax given in *B. A. N.* 100 is in error. The corrected parallax, masses and absolute magnitudes are $\pi = ''\cdot 032$; $m_1 = 0\cdot 92\odot$; $m_2 = 0\cdot 82\odot$; $M_1 = 4\cdot 85$; $M_2 = 5\cdot 35$, which values do not differ much from those according to the new orbit by FINSEN.

ξ Scorpii and Σ 1999 considered as a fivefold system, by *G. P. Kuiper*.

A comparison of the magnitudes and the spectra suggests the possibility that the neighbouring systems Σ 1998 = ξ Scorpii and Σ 1999 are physically connected. The trigonometrical parallax for ξ Scorpii is $0''\cdot 036 \pm ''\cdot 004$, the proper motion of the centre of gravity of A, B and C is $0''\cdot 073$ in $244^\circ\cdot 0$ (BOSS). No parallax nor accurate proper motion is available for Σ 1999. As DEMBOWSKI has connected Σ 1998, $\frac{1}{2}(A + B)$ and Σ 1999 A micrometrically on 7 nights (epoch 1866·55), it seemed best to repeat this now, as 64 years proper motion of Σ 1998 would be large enough to make a decision as to the character of the motion of Σ 1999 possible.

DEMBOWSKI found

1866·55 $169^\circ\cdot 16$ $280''\cdot 78$ 7*n*

My measures are

	h		°	''		
1930·424	+ 0·2	*E*	168·90	279·95	:	2—3 *)
·427	+ 0·4	*W*	168·87	280·28	:	1—2
·433	+ 0·1	*W*	168·92	280·15	:	2—3
·479	+ 0·1	*E*	168·89	280·13	:	2
·490	+ 0·1	*E*	168·85	280·21	:	3
1930·451			168·89	280·14		5 *n*

*) Measured component A of Σ 1998: $168^\circ\cdot 84$, $279''\cdot 49$; this has been reduced to $\frac{1}{2}(A + B)$.

The columns give date, hour angle, position of telescope, position angle, distance, direction of eyes, definition (1 very bad, 5 excellent); power 238.

In order to eliminate the internal motions of Σ 1998 ½ $(A+B)$, C on the one side and of Σ 1999 on the other I collected all the measures, adding my own ones, viz:

	1930·464	59°·0	7″·50	3 *n*
and	1930·456	100°·55	11″·28	4 *n*.

For the relative motion I obtained

Σ 1998 ½ $(A+B)$, C $\theta_t = 64°{\cdot}5 - 0°{\cdot}177\ (t-1900)$ not corrected for precession.

$d_t = 7''{\cdot}28 + 0''{\cdot}0050\ (t-1900)$

Σ 1999 $\theta_t = 100°{\cdot}8 - 0°{\cdot}025\ (t-1900)$ not corrected for precession.

$d_t = 11''{\cdot}06 + 0''{\cdot}0094\ (t-1900)$

We will first consider the parallaxes. The dynamical parallax of Σ 1998 *AB* (according to AITKEN's orbit and EDDINGTON's mass-luminosity curve) comes out to be 0″·040. The motion derived for Σ 1998 *AB*, *C* gives $\pi_h = 0''{\cdot}045$ (computed according to the scheme of RUSSELL, *A. J.* 930), and for Σ 1999 I find 0″·034. The spectroscopic parallax of Σ 1998 *A* is 0″·044 and of Σ 1998 *C* 0″·036 (*M. W. C.* 199); the trigonometrical one for Σ 1998 is 0″·036 ± ″·004. We may adopt 0″·040 for the parallax of Σ 1998. We find practically the same for Σ 1999.

From EDDINGTON's curve the masses for Σ 1998 *A*, *B* and *C* are then 1·50 ⊙, 1·39 ⊙ and 0·95 ⊙; for Σ 1999 I take the two masses equal.

Reducing my measures to the epoch of DEMBOWSKI's by applying precession, the motion of Σ 1998 *AB* and Σ 1999 *A*, and the difference in differential refraction Leiden—Gallarate, we get

1866·55	169°·16	280″·78	7 *n*	DEMBOWSKI
1930·45	169·13	280·56	5 *n*	KUIPER

The relative motion appears to be 0″·25 in 64 years or 0″·004 a year. This happens to be exactly the amount to be expected as orbital motion in the large system, but the difference hardly surpasses its mean error.

Additional evidence of the physical relationship is furnished by the recently published radial velocity of Σ 1999 *A*, viz. − 33·3 ± 1·4 km/sec (*M. W. C.* 387) whereas the values found for Σ 1998 are — 33·6 ± 0·46 (Lick) and — ·32·9 (Cape) for *AB* and — 33·7 ± 2·1 (M. W.) for *C*.

It may be concluded that the two Σ systems belong together; the projected distance between them is 7000 astronomical units.

The space velocity of the system relative to the sun is 34·6 km/sec towards $\alpha = 72°{\cdot}8$, $\delta = +4°{\cdot}4$. The components *X*, *Y*, *Z* are + 10·2, + 32·9 and + 2·7 km/sec.